MARINE RECORD

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TO COMBINE U. S. N. LINE AND ENGINEER OFFICES.

Secretary Long has submitted to Chairman Chas. A. Boutelle, of the House Committee on Naval Affairs, a copy of the proposed bill to combine the line and the engineers of the navy and to increase the efficiency of the naval service, which was prepared by the special board that met with Assistant Secretary Roosevelt as chairman. Secretary Long says:

"I can add nothing to the force of the report, with the spirit and general tenor of which and of the bill accompanying it, I am in hearty accord." Therefore, he recommends the passage of the bill with some slight modifications which he suggests.

The most important of these is a change in the sections retiring officers with the rank and three-fourths pay of the next grade above. Secretary Long says: "He should be retired with the rank and three-fourths pay of the next grade held by him at the time of his retirement, and this is especially desirable in the section providing for voluntary retirements."

Another amendment is in the section relating to the commissioning of the academy boys. The secretary providesthat they shall be called midshipmen, and that they shall be commissioned in the lowest grades of the line and marine corps after taking the course at Annapolis and a one year's cruise, the sea course being an addition to the original bill. It is also a requirement that the cadets who have completed the four years' course will also have a year's sea service.

Another amendment limits the adjustment of salaries of officers to those on the active list. Another addition is one that requires enlistments before retiring after 30 years' service shall have reached the age of 50 years.

Secretary Long says the bill increases the annual expense, but this we must have if we are to have what we actually need—a naval service as efficient as any in the world. The bill increases the number of officers by only 90, which number would be required in any event by the increased number of ships in service. As an offset, however, the retirements provided for, will reduce the expense of the retired lists. The report of the assistant secretary shows that in the course of a few years the bill will really effect a saving inexpense.

BOTTLE DRIFTS—ATLANTIC CURRENTS.

A bottle dispatched from the steamship Guildhall on May 31, 1894, when in 46° north, 31° west, almost midway between Brest and Newfoundland, was picked up on Feb. 13, 1896, at Antigua, after a drift of about 4,500 miles. It had evidently passed close to the Azores, the Canary Islands and the Cape Verdes on the way. Another, thrown overboard from the sloop Sapolio July 20, 1892, traveled eastward toward the Azores, and thence, as in the previous instance, until it was recovered near Turk's Island, north of Haiti, on Feb. 8, 1896, after a drift of nearly 6,000 miles.

A bottle message from the sailing ship St. Enoch is probably the most interesting of the 82 drifts shown on the United States current chart just issued. It was thrown overboard when some 700 miles west of Sierra Leone, under the influence of the well-known Guinea current, setting eastward on to the African land. The master of this vessel noted on the message that she had experienced an easterly current of 36 miles during the previous day. Hence there is reason to suppose this messenger was swept eastward until some incident occurred to transfer it to a current setting in a westerly direction. Once on the latitude route, however, it passed leisurely along through the passages of the Windward Isles, escaping contact with any land; followed the trend of the Atlantic coast of North America till clear of Newfoundland and thence onward to Totabrough Walls, Shetland Islands, where it was found on March 20, 1896, after having accomplished a drift of nearly 8,000 miles in less than 1,000 days.

PLEA FOR A MERCHANT MARINE.

The United States Consul at Chemnitz, Germany, in his report to the Department of State says: The world is waking up to the importance of commerce as a source of national greatness and prosperity. Ships will be wanted. The wharves of the world will hardly supply half the need. The United States will get a goodly share of the world's orders, once it is known how successful, solid, and, withal, cheaply we can work. In all this is an eloquent argument in favor of the Panama or Nicaragua Canal. If we are to win our way in the East, our efforts must equal those of this eager, enterprising German Empire. There is no reasoa why, in a friendly fight for first place in the East, almost every European nation, even England herself, should not enter, as far as the fight concerns us, heavily handicapped. Cut the canal at Nicaragua, control it as England does the Suez, and the East is ours. China and Japan will want cotton, railroad iron, machines of all kinds, tools, chemicals, petroleum, clothes, and thousands of manufactured articles for their half a thousand millions. With the canals cut, California, Oregon and Washington manufacturing, freight rates reduced on the great transcontinental lines running from our Central States, from St. Louis, Chicago and Kansas City, we must win. It is for our manufacturers, merchants and farmers to move as the same classes move in the older countries.

CAPT. JAMES S. DUNHAM, CHICAGO.
Elected President of the Lake Carriers' Association, 1898-9.

PRESENT WORK ON THE PANAMA CANAL.

Consul-General Gudger, of Panama, under date of November 3, 1897, sends a report on the progress of work on the Panama canal, to connect the Atlantic and Pacific oceans by way of the Isthmus of Panama, in which he says:

The canal extends from Colon, on the Atlantic, to Panama, on the Pacific, the length being 54 miles. Work was actively begun in the year 1882. At times, and most of the time till the discontinuance of the work in 1889, there were at work no less than 10,000 laborers. The very best and latest machinery was used. This consisted in part of dredges, drills, engines, pumps, etc. Some of this machinery was well adapted to the work in hand, but a larger portion of it has never been used, and therefore its utility is not known. All along the canal line, one can see vast sheds, full of new and costly machinery, while in the river and ditches are large quantities of it. It is estimated that, from first to last, the company paid out for machinery $100,000,000. It is also estimated that there has been expended on the work for material, officers, etc., $275,000,000. It would be a conservative estimate to say that the canal is about one-third completed; and yet, it is supposed that, with the machinery, etc., on hand, the rest of the work can be accomplished for $150,000,000.

The old company went into liquidation, and, on its ruins, a new company was organized and work begun in 1894. Since then, there have been employed an average of about 3,000 laborers. The new incorporators, as were the old, are mostly Frenchmen. It is believed that, if work continues at all after this year, such a force will be placed on the works that it can be finished in from seven to ten years. In December or January next, a committee will investigate the progress of the work, and on the ability of the new company to finish the same. If they report favorably, it is expected that, by floating bonds or getting new subscriptions, the means can be obtained for pushing the work in good earnest. If, however, this committee should report unfavorably, the work will cease and the dream of De Lesseps will be left for other generations.

The canal is practicably finished from Colon to Bujeo, fourteen miles. This, however, is the least expensive part of the canal. The great trouble is in passing through the Culebra Ridge. At first, it was thought there would be no need for locks, but this idea has been abandoned. The width of the canal will be 160 feet at the top and 72 feet at the bottom, except through the ridge, where it will be 78 feet at the top and 29 feet at the bottom.

The return of more than 500 laborers to the Kongo has given rise to the idea of a wholesale discharge of workmen by the company. This is not correct. These particular men were not suited as laborers here, had no disposition to work, and the company was bound by stipulation as well as justice to return them to their home.

No one can properly estimate the wonderful benefits the completion of this work would be to trade. It would absolutely revolutionize business. Vessels by this route, sailing from New York or Europe, could reach San Francisco and the Orient, saving thousands of miles and avoiding the dangers and storms of the Cape. The canal may not be completed for some years to come; but that sooner or later it will be, admits of but little doubt. France may not push the work forward, but some other nation or some other company will surely do so, if those now in charge forfeit their rights. It is intimated that England is doing all in her power to get control of the canal; whether this be true or not, remains to be seen.

NEWS AROUND THE LAKES.

CHICAGO.

Special Correspondence to The Marine Record.

Thos. G. Miller and W. I. Babcock went to the annual dry dock companies convention, held at Milwaukee on Tuesday.

At the Chicago Shipbuilding Co's. shipyard, the steamer City of Bangor is in dock receiving a large number of new bottom plates and frames.

Arrangements have been made for a daily line of steamers to run between Chicago and Whitehall, Montague and Sylvan Beach next season.

The Big Four Railroad Co. have commenced building a dock extending half a mile along the north side of the Saint Joseph river on lines recently established by government engineers.

The Independent Tug Line towed the steamor Argo and schooner Churchill to Armours' A & B elevators, schooner Lizzie Shaw to the Iowa elevator, steamer Mecosta to the Union elevator.

At the Independent Tug Line's floating dry dock, the tug O. B. Green was in for some new bottom planks, general repairs and calking, the tug Bertie L. Cokell is in for some repairs and calking.

Many Chicago people are in receipt of invitations from Milwaukee Lodge, No. 6, of the Shipmasters Association, to attend their grand annual banquet and ball, on Thursday evening, January 27th.

Capt. Frank Welcome, manager of Capt. James Davidson's fleet, who has been here since the close of navigation, laying up the boats and superintending their loading hopes to go to his home at Buffalo this week.

The members of Chicago Lodge, No.3, of the Shipmasters' Association, at their meeting held last Wednesday, presented to Capt. James H. Loftus, their retiring president, a handsome gold pin of the order. Capt. John Jenks made the presentation speech in his usual humorous san froid manner.

Capt. R. C. Brittain is building at Saugatuck a passenger and freight steamer to ply between that port and Milwaukee. Her dimensions are 100 feet over all, 18 feet beam, 7 feet molded depth, to draw 5½ feet when loaded. She will have a 16x16 engine and will have accommodation for 18 passengers. She is to go into service about June 1st.

The following gentlemen went from Chicago to the Lake Carriers' Association meeting at Detroit, Capt. J. S. Dunham, Robbie Dunham, James Sinclair, H. C. Burson, W. J. Rardon, Jas. S. Channon, Miles Barry, Peter Barry, Jas. A. Calbick, T. J. Prindiville, H. W. Cook, G. C. Blair, D. Sullivan, D. T. Helm, C. W. Elphicke, D. C. Deegan, J. H. Pauly, C. E. Kramer, J. S. Gadsden.

The Dunham Towing & Wrecking Co. towed the barge Magna and steamer Marina from South Chicago to Armour's A & B elevators, the barge Celtic to the Alton elevator, the steamer Niagara to Armour's A & B elevators, barge Martha to the Galena elevator, steamer Madagascar to the Indiana elevator, steamers Venezuela and Bermuda to the City elevator, barge Arenac to the Wabash elevator, steamer Simon Langell to the Santa Fe elevator.

The steamer City of Duluth loaded a full cargo of grain at South Chicago last week for St. Joseph, for the Big Four Railroad Co. In connection with the receipts of that cargo it is announced from St. Joseph, that 1,000,000 bushels of wheat have been contracted for. The grain is transferred through elevator to the Chicago & West Michigan, and Big Four Railroads. It is said the Vandalia Line will also build an elevator at St. Joseph.

On Friday and Saturday last, J. G. Keith & Co. placed vessels for Leiter for about 1,300,000 bushels of wheat at 2½ cents, for winter storage and delivery at the opening of navigation. After the close of navigation the capacity of Chicago's winter fleet was estimated at 12,000,000 bushels. Charters for about 7,500,000 bushels have already been made. If charters keep at going rates or improve, no doubt the large fleet of grain carrying vessels laid up at Milwaukee and Manitowoc, will come here to load before navigation opens.

When the Soo Line steamers Minneapolis and St. Paul were launched at the Chicago Ship Building Co.'s shipyard last April, George L. McCurdy promised Capt. Wm. Jamieson and James Jackson, who were selected masters of the steamers, to present each with a silver water service if they succeeded in running them through the season without a mishap. This they have done, and Mr. McCurdy in fulfillment of his promise has forwarded to each from Chicago, a water set, consisting of a handsomely chased sterling silver pitcher with tray, and goblets of finest cut glass. The pitchers bear the names of the respective steamers. Mr. McCurdy's idea is a novel one and worthy of adoption, by both owners and underwriters.

At J. B. Bates & Co.'s South Branch shipyard, the schooner F. D. Given is receiving a new stem. Steamer H. A. Tuttle is having her top sides, deck and ceiling recalked. Steamer Lansing is receiving new decks and hatch coamings, and a through recalking. Steamer Mecosta is receiving part new floor and some new stringers and rails. Steamer L. R. Doty some new stanchions and rail, the steamer Germanic extensive repairs to stern. Schooner Emma C. Hutchinson some new deck forward, steamer Panther some new hatch coamings and part new main and upper decks. Steamer D. C. Whitney considerable new plank on her port side. Steamer Viking part new rail, new whale strakes and calking decks. Steamer Nyanza some new sheet iron on her bows and decks, and top sides overhauled, schooner Wadena had hatch coamings calked, schooner Vinland received part new rail and new chocks aft, and had decks recalked. The firm are very busy and are employing a gang of 140 men.

BUFFALO.

Special Correspondence to The Marine Record.

The Lackawanna has come out of dry dock after extensive repairs of damage sustained principally by striking Ballard's Reef late last fall. Sixteen plates and a number of floor frames had to be renewed.

The fire in the tug Danforth of the Hand & Johnson line was a serious matter enough, on account of the line carrying no insurance, but the loss of $3,000, as given last week, is much too large. A surveyor who examined the tug thinks she can be rebuilt for $500, as the fire broke out in her coal bunkers forward and did not injure the machinery.

At the annual election of Buffalo Lodge, Shipmasters' Association, Alexander Clark was chosen president; E. C. Maytham first vice-president; John Dugan, second vice-president; John Perew, secretary; Lyman Hunt, treasurer, and John McCarthy, trustee for three years. Capt. Clark was selected as delegate to the grand lodge, with Ed. Thorp alternate.

Another effort is on foot to establish the ownership of the city to the sea wall strip, the dispute over which has so long prevented the establishment of docks on the lake front. If the undertaking is carried through there will be great activity there at once. To get ready for it a petition is being signed for a new bridge across the Blackwell canal leading to the lake front. The present channel is too narrow for the big vessels trading to the Tifft farm and the Northern and Export elevators.

The Lake Erie Boiler Works presented a bill to the fire commissioners this week for a boiler for the fire tug George A Potter. According to the terms of the contract, the company was to get a bonus of $75 for every day less than 20 that was occupied in removing the old boiler and replacing it with the new one. The work was completed in eight days and a warrant for $900 was ordered drawn in favor of the company. This is the kind of work one of our principal industries is capable of doing.

The managers of the Maytham tug line are saying that they have had enough of wooden tugs. This is not on account of the powerful new steel one they are building, but from recent experience with the tugs of the line, two of which are receiving an overhauling. It is found that when a wooden tug goes to the dry dock for large general repairs the chances are that twice as much money will have to be laid out as was intended. The life of a wooden tug is not much over 15 years, and she needs some heavy repair work before that time to carry her through. On the other hand, the iron tug Alpha, which was built in 1882, is found, on receiving an overhauling, to be almost as she was built, with the exception of the wooden deck and house. She is not rusted or otherwise weakened to any extent.

DETROIT.

Special Correspondence to The Marine Record.

The last known timbers of the old sloop Porcupine, which for over a quarter of a century found their resting place on the shores of Spring Lake, have been taken out for their historic value. The Porcupine was one of Oliver H. Perry's fleet in the battle of Lake Erie.

Capt. A. B. Davis, of the revenue cutter Walter Q. Gresham, received instructions from the Treasury Department to attend the annual meeting of the Lake Carriers' Association. Capt. Davis will no doubt be able to explain to the vesselmen some things in connection with the St. Mary's river regulations that fail to give satisfaction in some quarters.

The car ferry steamer Pere Marquette is to receive several improvements in the near future. A large lounging cabin with a smoking room and other conveniences for passengers will be built in the rear of her present cabin. The work will be done while the vessel is sailing and will in no wise interfere with her regular trips. Later on a large number of staterooms are to be added, making 40 in all.

The funeral of the late Capt. E. C. Gatfield, of Amherstburg, was attended by the Detroit and Windsor friends of the deceased. Knight Templar and other Masons and the Twenty-first Fusiliers' band of Windsor, also attended. The Masonic services were conducted in the family residence by E. S. Wigle, P. D. D. G. M. of Erie district. After this the body was taken to the Episcopal church, where service was conducted by Rev. Mr. Berry. The body was interred in the Indian cemetery, Anderdon.

United States local inspectors Fitzgerald and Chipman, of Milwaukee, have suspended the license of first mate Charles Barth, of the steamer Petoskey for a period of 30 days, as the result of their investigation of the circumstances attending the recent collision between the steamers Iowa and Petoskey near Kenosha. The testimony showed that the port signal was sounded twice by the Iowa and only responded to once by the Petoskey, and that when the steamers were close together. The inspectors gave it as their opinion that had mate Barth put his wheel hard aport when he responded to the second signal from the Iowa, kept the Petoskey swinging under a port wheel and not stopped the engine, a collision would have been avoided. They find that he also erred in not answering and acting on the first signal given by the Iowa, thus violating pilot rules 1 and 3.

CLEVELAND.

Special Correspondence to The Marine Record.

Owing to the illness of Capt. C. A. Benham, Capt. S. W. Gould represented the masters and pilots of Cleveland at the annual meeting held in Washington. Capt. Gould was elected as alternate.

The fish dealers of this city, Sandusky, Lorain and Buffalo, have formed a combination of which a Mr. Carter, of Erie, is the sales agent. The object of the consolidation is to control the price of lake fish in the eastern markets and a noticeable stiffening of prices has resulted already.

That crowning event of many months' labor at the Lorain yards of the Cleveland Ship Building Co. took place Friday night when Superintendent Bristow opened a door in the sluiceway to allow water from the river to fill the company's dry dock. The length of the new dock is 500 feet, with a 90-foot gateway. Some dredging yet remains to be done in the cofferdam, but it will be ready to dock the first vessel this week. One of the Bessemer fleet will be the first to enter. The dock has been seven months in building. A fleet of boats are waiting to be docked, some for extensive repairs.

The management of the Bessemer Steamship Co. has decided upon names for the steel steamer and two steel towbarges building at the works of F. W. Wheeler & Co., West Bay City. The idea of honoring inventors whose achievements have been of special importance to the iron industry is still further carried out in the selection of names for the three new vessels. The steamer will be named Samuel F. B. Morse and the barges John A. Roebling and John Fritz. Samuel F. B. Morse was the inventor of the electric telegraph, without which railway development with its present magnitude would have been impossible. John A. Roebling is distinguished as the engineer who built the Brooklyn bridge, the suspension bridge at the Niagara and several other suspension bridges. He was the great pioneer in the manufacture and introduction of wire rods. John Fritz is still living and is the most eminent mechanical engineer in this country. He built the Cambria Iron Works and later the Bethlehem Iron Works, and as the inventor of the three roll system has probably done more than any other engineer for the introduction of the Bessemer process and appliances for cheapening and enlarging the production of iron.

In looking over the records in the office of the local inspectors of steamboats this week, I found that the first license in the district was issued on March 7, 1853, to Peter Ralph as pilot. Capt. Dan McFarlane, last season mate of the steamer Rube Richards, has 38 annual licenses to his credit, so also has Capt. Frank Brown, one of the directors of the Vega Transportation Co. John N. Philips, of the Ogdensburg line of steamers has been 42 years in active service as an engineer and the same length of time under license, while James Savage, the oldest engineer on the district has had 40 issues of his license, so also has Sam A. Wells, who was last year chief engineer of the Menominee line steamer Roman. So that there are quite a few of the old-timers yet around. Capt. John Kirby, who is hale and hearty to-day secured his first license as pilot March 23, 1853; Andrew P. Doty, second-class engineer, March 7, 1853; Nathanial P. Glazier, after 22 years of service, secured his first papers April 15, 1853, and he also was to the fore quite recently, although I did not learn whether he is on deck yet or not. Richard Barrow's license dates March 29, 1853, and he only buried his wife a week or two ago. Wm. Kennedy is also one of the old-time engineers, having had his marine engineers' license renewed 35 times. In those days they used to license a pilot for the trip, passage or cruise while the present issues are limited to five years, though they might as well be permanent.

PORT HURON.

Special Correspondence to The Marine Record.

George H. Bowles has gone to Washington, D. C., as a delegate to the M. E. B. A. national meeting.

Capt. Peter Eckbert will sail the new steamer Isaac Lincoln. He has sailed the steamer Ed. Jenks for the past six years.

Capt. Ed. Hendricks, delegate from Huron Harbor No. 46, of the American Association of Masters and Pilots, has gone to Washington to attend the annual meeting of the Grand Harbor, which takes place on January 17 to 22.

The first annual ball of the American Association of Masters and Pilots will take place on January 25, at the Auditorium. As it is the first the boys have undertaken, they will do all in their power to make it a success in every respect.

The contractor building the life-saving station is in a peck of trouble. The contract called for it to be completed January 1st, or forfeit $15 per day. He don't know whether the department will hold him to the forfeit, if they do he will come out at the little end of the horn.

The new steamer that Alex. Anderson will build at Marine City will be owned by A. F. Price, Fremont, O., five-eighths; Isaac Lincoln, of Dakota, two-eighths; and Capt. Peter Ekbert, of Port Huron, one-eighth. Mr. Anderson will take the small steambarge Ed. Jenks in part payment for the new boat, which will be named the Isaac Lincoln, after one of the owners.

TOLEDO.

Special Correspondence to The Marine Record.

The many friends of Capt. Thomas D. Gibson will be pleased to learn that he has been named as master of the large steel steamer Selwyn Eddy for the coming season. Capt. Gibson was at one time chief mate of the steamer G. G. Hadley, and for the five seasons afterward sailed the steamer Panther, owned by Leander Burdick and others, of Toledo. During the early part of last season he sailed the steamer E. C. Pope, but resigned at the time his brother-in-law was drowned in Buffalo creek. Both the Eddy and the Pope belong to the Shaw-Eddy Co., of Bay City, and Capt. Gibson's appointment to the Eddy may be considered in the light of a promotion, as she is a larger and newer steamer than the Pope. The Eddy is 359 feet long, 42½ feet beam, and carries 4,000 tons.

SHEBOYGAN, WIS.

Special Correspondence to the Marine Record.

William C. Fitzpatrick, who sailed as cook out of Buffalo, is spending his second winter at this port.

Vessel supply dealer Charles Lieberman and Capt. Louis Gunderson, are the proprietors of a lively place here known as the "gold mine" ice rink, the attraction on Sunday last was a race, at which about two thousand people attended.

Edward A. Hoffman, last season assistant engineer of the John Craig, was married on Thursday, at Detroit: to Miss Veronie J. Dimber. Ed. has the best wishes of his many friends for a long and happy wedded life in his new home at 481 Larned St., E. Detroit.

FLOTSAM, JETSAM AND LAGAN.

Deputy Marshal Shannon, of Toledo, went to Sandusky on Monday morning to sell the steamer Osceola at public auction. The boat was libeled last year for supplies and has just been ordered sold.

There is to be constructed at Newcastle-on-Tyne, England, by C. A. Parsons, the inventor of the system of marine propulsion by steam tubines, a vessel of the torpedo boat destroyer type, which, he estimates, will be capable of traveling from 36 to 40 knots an hour.

Nye, Jenks & Co., of Milwaukee, continue chartering vessels to keep their two elevators at least partially clear for fresh receipts of grain. This week they chartered the steamer Neosho for 90,000 bushels of corn to Buffalo, spring delivery, at 2¼c., and the steamer City of Glasgow on an optional deal. The Glasgow's corn capacity is about 105,000 bushels.

The Leiter party has chartered vessel room for 1,000,000 bushels of wheat, paying 2½c. for storage during the winter and freight to Buffalo in the spring. A good authority said the vesselmen had orders for room for an additional 1,000,000 bushels at the same rate. These big charters did not, however, help the Chicago wheat market to any extent durthe past week.

The city council, as well as the Toledo Chamber of Commerce, seem to favor the building of a fire boat for local protection, but they don't build. A half million dollars' of loss by fire would no doubt show the necessity of having, or rather not having adequate facilities to cope with the enemy, but we hope that such a catastrophc will never take place, yet, who knows?

The car ferry steamer Shenango No. 2 is now running on regular schedule time. She leaves Muskegon at noon each day, arriving at Milwaukee shortly after 6 p. m., starting on the return trip at 10 and arriving at Muskegon at 4 a. m. The freight offerings for the new route are increasing slowly, but with a degree of sureness that must be encouraging to the projectors of the route.

It is reported from Marinette, Wis., that the Illinois Steel Co., of Chicago, has made a great find of ore at its mine in Quinnesec. A body of Bessemer ore over 70 feet long, 120 feet wide and of great depth, has been uncovered, it is said. Three hundred more men will be put to work within 60 days. The prediction is made that Quinnesec, considered for years a dead town, will become one of the liveliest on the Menominee range.

Some newspaper men have but a sneaking regard for the truth. In writing of a cyclone out west one of them said that it turned a well wrong end up, a cellar upside down, moved township lines, blew all the staves out of a whiskey barrel and left nothing but the bung hole, changed the day of the week, blew the hair off the head of a bald man, blew mortgages off farms, blew all the cracks out of the fences and took all the wind out of a politician.

The new timber dry dock at the navy yard, Brooklyn, has been found to be in much worse condition than at first supposed, and some officers have expressed the opinion that the structure will collapse when the frost leaves the ground in the spring. More men have been put to work on the repairs, and if it is possible to mend the structure with the $50,000 appropriation it will be done by May 1. Naval Constructor Bowles will endeavor to find out who is responsible for the bad construction.

A San Francisco dispatch says: The unprecedented demand for steamers to engage in the Alaska trade, taken in connection with the engineers' strike in England, has had the effect of increasing the price of vessels for this purpose from 10 to 50 per cent. A British owner has refused an offer of over $140,000 for a steamer of 5,000 tons dead weight, which cost, less than four years ago, $125,000, and $140,000 has been offered for a steamer of 4,000 tons dead weight, which cost $112,000 two years ago. New vessels are not to be had at any figure.

J. B. Cable, of St. Paul, president of the Ohio Coal Co., and B. D. Smith, of Dulúth, superintendent of the company, were in Green Bay last week looking over dock sites. President Cable said: "Our visit here does not necessarily mean that we will build docks at this port. We intend to put in good docks at some point along Lake Michigan, but have not yet selected a place. In case we decide to build we will not take the matter up until in April. We would expect to build docks at a cost of $50,000 and equip them with modern machinery. As to where they will be located we do not yet know.

The Escanaba Mirror announces that the ore dock there which was destroyed by fire some time ago will be rebuilt at once. This was the Northwestern Railway Co.'s No. 4 dock, and the largest at Escanaba. The dock as rebuilt will be 60 feet high and modern in every respect. No. 2 dock will be torn down and the material in it used in reconstructing No. 4, as the greater capacity the latter will have when rebuilt will enable the company to dispense with No. 2, which has not been used much latterly. The cost of the rebuilding No. 4 dock is placed at $250,000, and the work will give employment to several hundred men during the winter.

Four hundred steel ore cars, in addition to 600 already built, will be provided for the Carnegie ore railway—Conneaut to Pittsburg—before the opening of navigation next spring. Steel rails of the hundred-pound kind are now being laid on the road, and the new twelve-rigged plant for direct transfer of ore from vessels to Conneaut is nearing completion. A car dumping machine for transfer of coal at Conneaut is also to be delivered by the McMyler Manufacturing Co., of Cleveland, before the opening of navigation, and during the present week a Thew automatic steam shovel for loading ore from dock to cars will be installed on storage dock.

According to the Toronto harbormaster's annual report for 1897 2,988 vessels arrived in port during the season, as against 2,820 in 1896, with tonnage of 954,597, as against a tonnage of 909,146, in 1896. The receipts of coal by water totaled 128,217 tons, as against 153,146 tons in 1896. The reason given for this falling off in the coal receipts is the difficulty experienced in getting railway cars to bring the coal from the pit's mouth to the lakeside. The total quantity of coal per water and rail brought there during the year was 534,329 tons. In consequence of the abundant fruit season last year, the quantity of fruit carried by water was more than double that carried in 1896.

Capt. C. O. Flynn, of Duluth, has been visiting the copper country in the interest of the proposed new steamer line between Duluth and Portage Lake, is satisfied from the encouragement accorded him by the business interests that the venture will become a paying one and he has decided to go ahead with it, as announced in the RECORD January 6. A stock company will be organized after which a contract will be placed with a shipbuilding company for the construction of a new steamer. The jobbing houses at the head of the lakes are fast convincing local dealers that they can compete successfully with Chicago, and with the new boat service they will be in position to fill and deliver any order for goods inside of 24 hours. The outlook for the new line is becoming positive.

Capt. Wm. Duff, of Port Clinton, brother of the late Capt. John Duff, visited Toledo this week. He reports that the schooner his brother started to build in Port Clinton is all in frame. It will require about $5,000 to complete the work. She will carry when finished 18,000 bushels of wheat. No work is being done on her at present. The late Capt. John Duff owned and sailed the schooner C. B. Benson. He took her to European waters and afterward brought her to the lakes again. Four years ago last fall Capt. Duff, with a crew of six men, while on the Benson off Port Colborne, Ont., were caught in a storm and the Benson went down with all on board. Search was made on both sides of the lake but not one of those who perished was found. The Benson was afterwards located. Capt. William Duff is now the only one of four brothers living.

A STEEL STEAM LIGHTER.

There is now being completed at the works of the Gas Engine & Power Co., and Chas. L. Seabury & Co., consolidated, Morris Heights on the Harlem, a steel steam lighter for the Erie Railroad Co., general dimensions are 115 feet overall, 30 feet beam, 11 feet 6 inches depth and 7 feet 3 inches draft. The hull is constructed entirely of steel with heavy beams and double plating on water-line forward. There are five keelsons throughout entire length and nine forward. The frames are spaced 15 inches for a distance of 20 feet from bow, and the remainder have 21 inch centres. In general appearance this vessel will resemble the ordinary wooden lighter, and is the first of its kind to be used by a Railroad Co. for terminal service in this country. The machinery will consist of a simple engine with cylinders 22x26 inches fitted on bed stiffened with intercostals, steam will be furnished by a shell boiler of about 600 horse-power. A trial trip will soon be made, and very good speed is expected. In the construction of this craft the Erie Co. was represented by Capt. Cherry, superintendent of floating equipment, and chief engineer Dubois.

DIRECT GRAPHIC METHOD FOR FINDING THE DEVIATIONS ON COMPASS COURSES FROM THE MAGNETIC CO-EFFICIENTS.

(COMMUNICATED.)

In the English Admiralty Manual, the standard work on deviations, the graphic methods for finding the deviations from the magnetic co-efficients are all based on magnetic courses, from which indirectly are obtained the deviations of compass courses by more or less tedious graphic processes by the aid of Napier's diagram and so forth. For any and all of these circuitous ways of finding the deviations for all compass points the following direct method may be used to great advantage in practice.

The signification of the co-efficients A, B, C, D, and E is supposed to be known. B and C are substitutes for the force F, producing semi-circular deviation, and its starboard angle *a*. D and C are substitutes for the force G from horizontal induction producing quadrantal deviation, and its starboard angle *b*. Geographically, B, C, and F are the sides of a right-angled triangle in which F is the hypotenuse and *a* the angle opposite C. Similarly is represented the relation of D, E, G and *b*. A is the abscissa of the generating circle for the quadrantal deviation. The method consists of two distinct parts, viz., diagram A or the quadrantal deviation, and diagram B for the semi-circular deviation.

DIAGRAM A.

Draw a straight line in the direction north—south, and at right angles to it a straight line east—west, the intersection point of both lines being O. Lay off on the NS. line from O to the north A, as unity of the construction (from 6 to 12 inches). The point thus obtained may be called the center of deviation. Lay off on the EW. line from O the value of A, to the right if positive, and to the left if negative; the point thus obtained is the center of the generating circle, the radius of which equals G. Describe with G the circle and draw through its center a line forming with the NS. line an angle equal to the starboard of G, counted from the north of the NS. line. The point of intersection with the circumference of the circle call north, and from this point out divide the circumference into 16 equal parts, and mark them in the order of the compass points. From the point called north, beginning the first point to the right of it will be N. by E., the second NNE. and so on, the last point will be S. by E.; so that south will coincide with north, S. by W. with N. by E.; but it is not necessary to mark the courses from S. over W. to N. Finally, draw from the center of deviation straight lines to all the marked points on the circumference of the circle, which lines form with the NS. line the angles representing the quadrantal deviation for the respective courses marked at the circumference. The lines through the center may be called C with a suffix affixed indicating the course to which each belongs. These lines are an essential part of the construction of the semi-circular deviation.

DIAGRAM B.

With the force F as radius describe a circle, and through its center draw a north-south line. Draw another line through the center forming with the NS. line, counted from the north, an angle equal to the starboard angle of F, and call the point of intersection with the circumference of the circle north. From this point as north construct a full compass rose of 32 points, marking every point at the circumference with the initials of the course it represents.

With these points successfully as center, and the length of the respective c's in diagram A as radius, cut the NS. line to the south and connect each pair of points by a straight line. The angles thus formed by the c's with the NS. line represent the semi-circular deviation on the respective compass courses marked at the circumference of the circle.

The quadrantal deviation by diagram A, as well as the semi-circular deviation by diagram B is always east when to the east of the NS. line, and west when to the west of it.

The algebraic sum of the quadrantal and semi-circular deviation on each course equals the deviation total.

As the quadrantal deviation is nearly constant for all magnetic latitudes, diagram A, once constructed with the exact values of A, G, and *b*, remains unchanged. This enables us, on a change of latitude, to find from observations of the deviation total on two adjacent cardinal points, or two adjacent quadrantal points, the semi-circular deviation on these points, and from it by means of diagram B and the c's in diagram A, the altered value of F and *a*, an illustration of which will be given in another issue.

All the constructions are greatly facilitated by using a compass card of suitable size, containing points and degrees for laying off courses and angles, the card having a small hole at the center of the shape of three quadrants, to exactly center it on any point.

JOHN MAURICE.

Chicago, Jan. 20, 1898.

We sailed upon the ocean blue,
One almost cloudless day,
And in the boat there were but two
As we passed down the bay.

And as the wind was dead ahead
At half a gale or more,
I took a reef or two and said:
"I think I'll hug the shore."

Her eyes then quickly sought my own
And with a roguish grin,
She said, in half-reproachful tone,
"Well, where do I come in?"

TO IMPROVE HAY LAKE CHANNEL.

A matter to which the vesselmen of the lakes who are engaged in the Lake Superior traffic are again turning their attention, is the further improvement of the channel at the lower end of Hay Lake. The present tortuous channel around Neebish Island into Mud Lake, with a minimum width of 300 feet and its innumerable crooks and turns, is not only a constant menace to vessels, but a source of considerable expense as well, because of the reduced speed at which craft are compelled to make the run there, which means a loss of time and money. In order to do away with this unsatisfactory condition the Sault Ste. Marie News suggests that two plans are feasible. The present channel can be widened, or a new channel made through the West Neebish rapids, thus providing two channels. The advocates of the new channel are many. While the cost of the proposed channel, in comparison with that of widening the present channel would be slightly greater, it has many advantages over the latter proposition. The vesselmen figure, for one thing, that with two channels, one could be used by upbound, and the other by downbound boats entirely, and in this way the chances of accidents would be reduced to a minimum and a great deal better time could be made by the craft. If there is any one thing more than another in which time is a desideratum, it is in sailing, for a delay of a few minutes at one place quite frequently entails a loss of two or three hours at another by a vessel. From the foot of Hay Lake around the Encampment, to Mud Lake, is the most dangerous portion of upper lake navigation. More accidents have occurred there than on any place on the river because of its abrupt turns and the narrow channel. Through the West Neebish, on the other hand, the channel would be a comparatively straight one and would have the additional advantage of being nearly a mile shorter. It can thus be seen that the proposed route would be of inestimable value to marine interests.

Assist. U. S. Engineer Joseph Ripley, who has had charge of the river improvements, is a strong advocate of the new channel. Hydrographic work, which has been recently completed in the re-survey of St. Mary's river, including the West Neebish, has been carefully done in detail, and the results were used last year in estimating the cost of the West Neebish channel. Mr. Ripley prepared a comprehensive report on the proposed route and submitted it to the engineering department. This will do away with considerable of the preliminary cost of the project. The matter is one which the Lake Carriers' Association can assuredly work out to a successful conclusion, if the proper steps are pursued. The rapidly increasing Lake Superior commerce demands all the facilities that can be afforded, and it is not likely that Congress will interpose any objection when the project is properly presented for its consideration, as it appears will certainly be the case in the near future.

There has been no expenditure of government money for the improvement of rivers, harbors and canals which has produced such gratifying results as the deepening of the locks of the Sault Ste. Marie canal, pertinently remarks the Detroit Tribune. This is best shown by comparing the resulting traffic with that brought about by the construction of other ship canals. The city of Manchester, England, desirous of becoming a port, and to save the expensive transfer of merchandise at Liverpool for a railroad haul of but 35 miles, completed a canal to the ocean. It was opened for business, but the expected traffic of 3,000,000 tons a year has not been realized. The Suez canal was opened in 1869 and its average tonnage of passing freights is less than 7,000,000. The Manchester canal cost about $33,000,000, and the Suez canal about $70,000,000.

Between the years 1856 and 1881 the original canal around the falls of Ste. Marie was in existence, but it was only available for vessels of 10 feet draft or less. In 1881 the government completed a 17-foot waterway around the falls and that year the traffic amounted to 1,560,000 tons as against 4,130,000 for the Suez. In 1889 the "Soo" canal traffic had become equal to that of the Suez at about 7,000,000 tons. In 1896 the lake canal amounted to 16,240,000 tons against 8,350,000 for the Suez, and this year the new 21-foot locks passed over 18,000,000 tons. The effect has been that the connection of Lake Superior to Lake Huron by a navigable channel has almost doubled the lake traffic. According to the records, 17,500,000 tons passed through Detroit river in 1881, but this had increased to 29,000,000 in 1895 and the increase of 14,000,000 tons which has come from Lake Superior in that period accounts for nearly all the general increase.

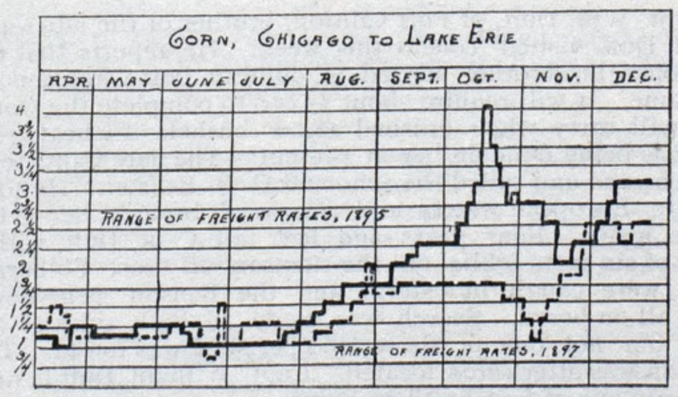
The present tonnage of the Great Lakes is 1,410,000, and this is nearly one-third of the entire American merchant marine. This wonderful showing has no parallel in canal construction and yet the cost of the government work is but a fraction of what municipalities like Manchester and Amsterdam have spent upon canals which will never carry one-fifth of the traffic which is now annually finding its way to and from the upper lake.

CHICAGO SENDS A PETITION TO CONGRESS.

There has appropriated by act of Congress June 3, 1896, the sum of $400,000 for improving the river and harbor at Chicago. It is now desired that a portion of this amount be used for dredging a twenty foot channel to the railroad docks, elevators, coal yards and manufacturing industries along the Chicago river.

The memorial states that during the season of navigation just passed, the stupendous results of a deep water channel through the connecting waters of the Great Lakes have become manifest. Probately no appropriation ever made of the general government for the improvement of waterways has had more widespread influence toward cheaper transportation than the 20 foot channel has had, and the first year of its use has saved fifty per cent. of its cost. The western farms have been moved far toward the seaboard, the eastern coal mines have gone westward. The manufacturers of iron and steel products have been enabled for the first time in the history of their trades to enter extensively the markets of the world. Steel nails in large quantities have been exported to Japan, South Africa and even to Europe. The markets for iron and steel manufactures have been immeasurable widened through the decreased cost of production, brought about in no small degree by the cheaper transportation of iron ore from the great iron regions of Lake Superior. This cheapened transportation has added a value of from 1 to 3 cents on every bushel of wheat shipped from the regions tributary to Lake Superior ports. It has added a value somewhat less but nevertheless, in the aggregate a very large sum, to the grain and other products which find their way to eastern markets through Chicago and Lake Michigan, and when the chain of adequate water transportation from lake cities to the coast is accomplished it is predicted that a bushel of corn will be carried from Chicago to New York for 3 cents.

Relative to lake and all rail shipments the secretary of the Chicago Board of Trade has compiled statistics covering the season of navigation now closed, and the eleven months ended November 30, from which it is learned that the shipment of grain in bushels by lake was 154,444,622, by rail 70,351,846, or by lake 3,781,744 tons and by rail 1,401,269 tons. The following scale shows the range of freights clearing the season of 1895 and 1897:



The argument as far as it relates to the carrying charges for corn, which is the staple shipment, is equally as conclusive when the figures on coal shipped from Buffalo to Chicago are taken into consideration, the following small scale being computed and shown as a graphic delineation of the season's fluctuation in coal freight rates during the same season.

During the season of 1897, vessels engaged in the general trade on the Great Lakes carried about 50,000,000 tons. With the usual increase in traffic, commerce in 1899 will be about 60,000,000 tons. It is asserted that no such volume of freight is transported either by rail or water, in a like district in any other part of the world. Without disturbing other lines of traffic, vessels can take fully 10,000,000 bushels of grain a week out of Chicago and can blockade every railroad leading to the seaboard from Lake Erie with a flood of grain. They have proved their ability to carry a coal supply to the northwest within six weeks after the end of a great strike. In short, the capacity of the lake fleet is only limited by the terminal facilities for the handling of freight at either end of the route.

In asserting the importance of Chicago river, stress is laid on the fact, that in so far as the west is concerned in the

matter of cheap transportation, the river is of as great moment as it has been at any time during the past sixty years. Its part in the city's commerce is still a leading one, notwithstanding the great developments of railway transportation since the river has been an avenue of traffic. The signers of this memorlal to Congress are the Mayor, Commissioner of Public Works, aldermen and officers of the Chicago River Improvement Association, Capt. James S. Dunham, chairman.

EASTERN FREIGHTS.

Messrs. Funch, Edye & Co., New York, report the following: "The brisk inquiry for tonnage noticeable at the end of last week has, unfortunately, slackened off again very perceptibly, and, at the time of writing, it is impossible to close vessels, especially for the grain trade, at top figure, to which owners of open tonnage then advanced their demand. Whilst freight for vessels to Cork f. o. are not quotable lower than our figures of last week, the inquiry has petered out, and we hear of attempted recharters on part of holders of tonnage, so that prospects point to the establishment of a lower range in the near future. The inquiry for cotton tonnage, sure to afford January loading, continues at the Gulf as well as at the Atlantic ports, although not so pressing as it was a short time ago. Demand for timber and case oil boats is light only, but some fixtures could, without doubt, be effected if scarcity of tonnage did not keep the demand for open vessels beyond charterers' views, who did not appear to be pressed for room.

The charters for the week of sailing vessels shows a number of fixtures from the Gulf to South America at about former rates, but most of these charters have been effected at an earlier period. There remains, however, still a fair demand for tonnage in that direction, likewise for timber from the Gulf for Europe, at rates continuing without noticeable change. Case oil freights to the East remain very strong, but without notable advance, which fact equally applies to Australian ports. The demand for vessels for the latter business continues fair, including later months, without, however, commanding the extreme rates paid for spot vessels.

CHICAGO ERIE CANAL AND SAULT STE. MARIE LOCKS.

It is not often that The Engineer, London, is caught napping, as its technical articles, illustrations, etc., are considered gospel, but some one in that office has been misled in the geography, or, perhaps, more than one is very dense regarding a vastly important section of the United States.

Mr. E. E. Russell Tratman, C. E., Chicago, writing to The Engineer calls the editor's attention to a recent issue wherein it is stated that an experiment on acceleration of train speed was carried out "at Chicago" on a track "laid alongside the Erie canal." That canal does not come within 500 miles of Chicago, and the tests were made at Schenectady, N. Y., 820 miles from Chicago. * * * It may also be in order to note that in another issue reference was made to the Sault Ste. Marie locks on the St. Lawrence river. But Sault Ste. Marie and its locks are at the narrow outlet between Lakes Superior and Huron, some 500 miles from the St. Lawrence river in a direct line, or over 800 miles by navigation.

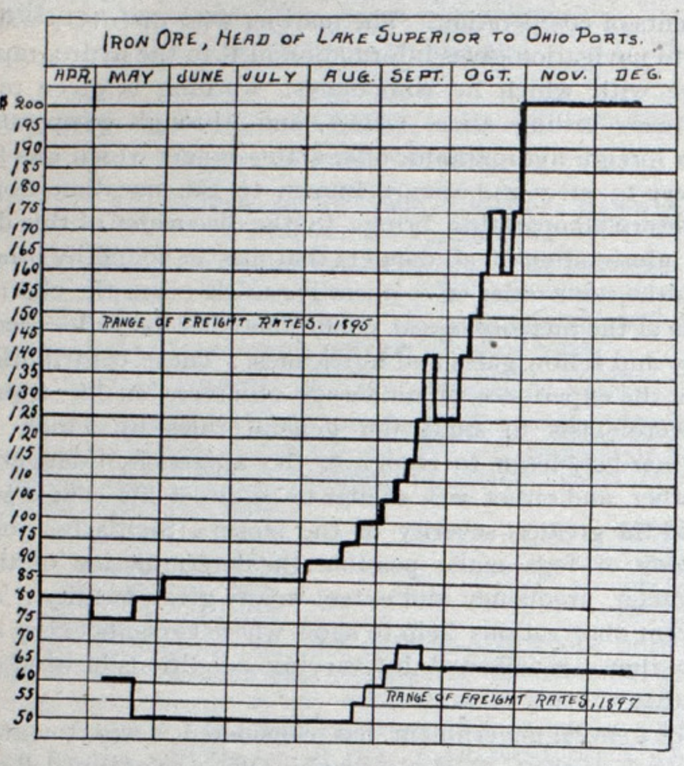
Perhaps The Engineer should send an emissary from that office to re-discover us, or is the United States too vast for their combined comprehensions to grasp localities within a thousand miles of each other?

TREASURY DECISIONS RELATING TO VESSELS

Foreign tugs not to be used in the coasting trade.

TREASURY DEPARTMENT, January 4, 1898.

SIR: In reply to your letter dated the 28th ultimo, this department has to state that in its opinion the use of a foreign-built tugboat in towing vessels of the Dutch Ocean Steamship Co. from Sabine City, Tex., to Port Arthur, Tex., would be in contravention of the laws regarding the coasting trade of the United States.



Respectfully yours,

W. B. HOWELL, Assistant Secretary.

A. J. M. VUYLSTEKE, ESQ., Port Arthur, Tex.

Plan for documenting vessels so that a register only will issue, not considered expedient and not authorized by law.

TREASURY DEPARTMENT, January 10, 1898.

SIR: Referring to your letter dated the 8th ultimo, relative to the adoption of a plan for documenting vessels, so that a register only will issue, this department has to state that the suggestion is not new, the question of such modification having been mooted at different times since the passage of the acts of Congress establishing the present system, which of course can not be changed without further legislation. The change has not been considered expedient, for the reason, among others, that a distinction must be made between coasting and foreign-going vessels.

Your office seems to be in error, in stating:

"The law requires that when a vessel goes foreign she must have a register. She returns to this country and goes into the coasting trade; she must surrender her register and take an enrollment."

Such a vessel may keep its register.

Respectfully yours,

O. L. SPAULDING, Assistant Secretary.

Colllector of Customs, Portland, Me.

American yachts in foreign ports.

TREASURY DEPARTMENT, Oct. 9, 1897.

SIR: I transmit herewith for your information, a copy of a letter dated the 29th ultimo, issued by the Department of State, relative to yachts. Respectfully Yours,

O. L. SPAULDING, Acting Secretary.

Collector of Customs, Boston, Mass.

[Letter above mentioned.]

DEPARTMENT OF STATE,
WASHINGTON, Sept. 29, 1897.

To the consular officers of the United States at seaports:

GENTLEMEN: The Department has received from the Secretary of the Treasury a letter dated the 20th ultimo, containing the following important decision relative to American yachts and seamen employed thereon:

"You request an expression of my opinion as to a consul's duty in the matter of the shipment and discharge of seamen on American yachts; inquire whether such yachts should be treated in the same way as American merchant vessels; and desire information as to the practice of this Department regarding the shipment of seamen in the United States on such vessels, and the general attitude toward them in the custom houses.

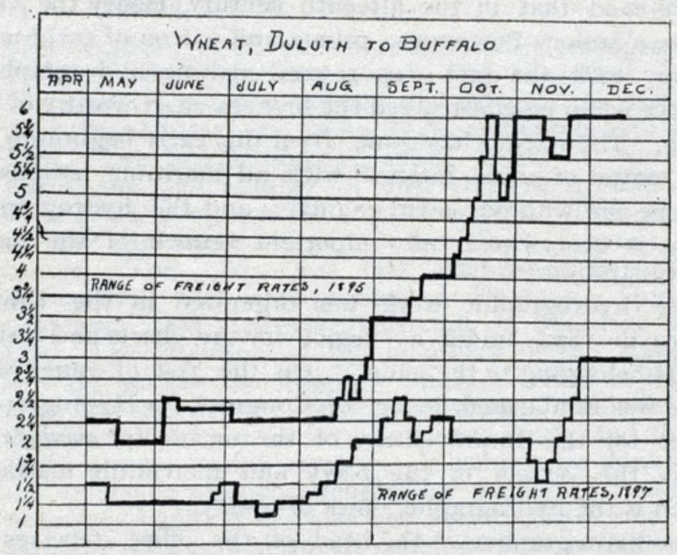
"Licensed yachts are not required to 'clear at the custom house' (sec. 4214, Rev. Stat., act March 3, 1883), and have been permitted to depart to foreign countries without obtaining the collector's certification to their crew lists and articles, but they are entered at the custom house on their return (sec. 4218, Rev. Stat.) The crew is not accounted for at the custom house, however, under section 4576, Revised Statutes. Such yachts are liable to seizure and forfeiture for any violation of the provisions of Title XLVIII, Revised Statutes of the United States (sec. 4214, Rev. Stat., act March 3, 1883). It has been held that the provisions of law relating to the shipment of seamen do not apply to such vessels, but shipping commissioners have been permitted to allow the shipment of seamen on the vessels before them, if requested to do so by the private persons concerned.

"This department answered negatively an inquiry (June 8, 1892) from your department whether 'seamen discharged from an American yacht, either documented or simply carrying naval commissions, or both, were entitled to relief in cases of destitution?' This opinion was based on a report obtained from the First Comptroller of the Treasury, in which he stated 'that seamen of the merchant marine alone are those within the contemplation of the law providing relief for American seamen' and, therefore, that he answered the inquiry in the negative, citing Matthews v. Offley (3 Sumner and 115 Opinions Attorney-General, 683).

"A subsequent First Comptroller, however, taking a different view, stated as follows:

" 'If seamen upon yachts duly registered prior to 1848 were entitled to the relief provided for American seamen, it would seem that the mere fact that yachts instead of being registered might be licensed, and thus exempt from some of the charges imposed upon trading vessels, should not deprive the seamen employed on such yachts from the relief provided for American seamen which they would be entitled to if such vessels had been registered instead of being licensed. There is nothing in the laws to-day that would prevent a yacht from being registered; in which case it is clear that the seamen employed thereon would be entited to relief. No difference in principle seems to exist between seamen upon a licensed yacht and seamen upon a registered yacht.

" 'The provision for the relief of seamen has always been broadly construed. It applies not only to American citizens upon American vessels, but to foreign citizens upon American vessels and to American seamen upon foreign vessels, and has been held to apply as well to those in the coastwise trade and in trade between the United States and the British possessions, the West India Islands, or the Republic of Mexico (notwithstanding vessels engaged in such trade are not subject to the same rules for the shipping of seamen as vessels engaged in the foreign trade), and it has also been applied to seamen upon fishing vessels (paragraph 175, Consular Regulations, 1888).



" 'The only argument why a seaman upon a yacht should not be entitled to relief is found in the presence of the words 'merchant seamen' as the subject of title 53, Revised Statutes in which the provision for the relief of seamen is found, and to similar words found in several paragraphs of the Consular Regulations; but it is manifested that the words were not used in the places in which they are found to distinguish merchant seamen on pleasure yachts, but were intended to distinguish seamen upon vessels of war from seamen on vessels owned by private parties.

" 'For the reasons stated above, in addition to those stated by the Fifth Auditor, I am of the opinion that seamen upon American yachts are entitled to the relief provided for American seamen in the same manner and to the same extent as if the seamen were upon other private vessels, and, therefore, the claim of Mr. Griffing will be allowed.' (First Comptroller Decisions, 1893-94, p. 309.)

"This decision covers both registered and licensed yachts. The act of May 28, 1896, requires that all officers of vessels of the United States having charge of a watch shall be citizens of the United States; and section 4131, Revised Statutes, provides that vessels registered pursuant to law, and no others, except such as shall be duly qualified according to law for carrying on the coasting or fishing trade, shall be deemed vessels of the United States and entitled to the benefits and privileges appertaining to such vessels, but that no such vessels shall enjoy such benefits and privileges longer than it shall continue to be wholly owned by a citizen or citizens of the United States or a corporation created under the laws of any of the states thereof, and be commanded by a citizen of the United States.

"Section 4311, Revised Statutes, declares that vessels of 20 tons and upward, enrolled in pursuance of Title L, and having a license in force or vessels of less than 20 tons, which although not enrolled have a license in force, as required by the title, and no others, shall be deemed vessels of the United States entitled to the privileges of vessels employed in the coasting trade or fisheries.

"It is probable that under this legislation the courts would hold that licensed yachts must be commanded and officered as mentioned in the laws cited above.

"In most respects, other than those above mentioned with the exception of the marking of names, American licensed yachts are subject to the laws of the United States applying to vessels of the United States.

"Registered yachts are upon the same footing substantially as other registered vessels of the United States, and their papers should be deposited at the consulates.

"It seems desirable that consuls should take action in accordance with the practice indicated above, so far as it is applicable at foreign ports."

You are directed to act strictly in accordance with the above decision. Respectfully yours,

THOS. W. CRIDLER, Third Assist. Sec'y.

A CONTINUOUS PERFORMANCE.

The extensive works of the Roberts Safety Water Tube Boiler Co., at Red Bank, N. J., have been for some time working twenty-four hours per day, and there is a prospect of this state of affairs continuing for at least three months longer. The night gang comes on when the whistle blows at six o'clock and work till the whistle blows at seven o'clock the next morning—with the exception of half an hour for midnight lunch. The general superintendent takes care of things from 7 a. m. until 11 p. m., when the assistant superintendent assumes charge of affairs. As the machinery practically never stops, a duplicate engine and boiler has been installed in case of a break down. Duplicate parts of all machines are also kept in stock for the same reason. Additional steam heating apparatus is also being erected, with an auxiliary boiler. Among others, they have the following orders:

One boiler for passenger steamer for Bath Iron Works, of Bath, Me.

Two boilers for dredge for New England Dredging Co., of Boston, Mass.

Two boilers for new steam yacht for Geo. Lawley & Son, Corporation of South Boston, Mass.

Two boilers for steam yacht Embla, for John T. Williams, of New York.

Two boilers for steam yacht, building for E. W. Bliss, by Erie Basin Dry Dock Co., of Brooklyn, N. Y.

Three boilers for steamers for South America, for Lewis Nixon, Crescent Shipyard, of Elizabethport, N. J.

Two boilers for large tug for Union Dry Dock Co., of Buffalo, N. Y.

Two boilers for passenger steamer, Sarah A. Jenks, for Capt. Joseph Jenks, of Sing Sing, N. Y.

One boiler for yacht for Chas. L. Mitchel, of New Orleans, La.

Two boilers for two passenger steamers for D. G. Whitlock, of New York.

One boiler for yacht for C. J. Bates, of Lake George, N. Y.

One boiler for steam yacht, Althea, for Chas. Sooysmith, of New York.

Four boilers for Yukon steamers for Moran Bros. Co., of Seattle, Wash.

One boiler for steam yacht, Nirvana, for Wm. R. Sands, of New Hamburg.

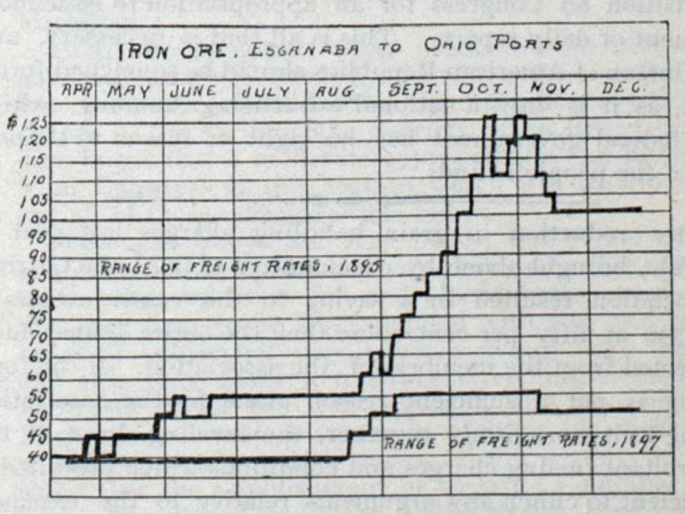
One boiler for steam yacht, Nada, for Chas. R. Flint, of New York.

One boiler for new steam yacht for Henry R. Stickney, of Portland, Me.

One boiler for shop use for Union Iron Works, of San Francisco, Cal.

Estimates have been furnished and some figuring is being done on further orders.

What will be the finest fishing tug on the lakes is now on the stocks at Manitowoc, Wis., being built for C. Endress & Sons, the Whitefish Point and Grand Marais fishermen. The tug will cost $7,000 and will be 92 feet in length, 19 feet beam and 8 feet depth of hold. The craft will be completed in February and will be used by her owners on Lake Superior. C. Endress & Sons are one of the largest fishing firms on the lakes and anticipate a lively business the coming season.



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THE annual expenditure for the Life Saving Service was $1,442,724 in 1896 and $1,507,341 in 1897, showing an increase of $64,616. The additional amount is due to a number of new stations having been built, old ones overhauled and a heavy equipment expense.

THE Ontario legislature adjourned Saturday last, and in its closing hours passed a bill providing that no persons shall be employed in the construction of subsidized railways in Ontario who are subjects to any country that has an alien labor law which practically excludes Canadians from employment on public or other works therein. This means that Americans need not expect employment on the Canadian railways. The legislature also passed the timber regulations, which require all sawlogs cut in Ontario hereafter to be made into lumber in Canada.

IT cost the government in 1896 no less a sum than $1,027,617 for the Revenue Cutter Service, last year the amount was $905,181, showing a decrease of $82,436. For the present year the annual expenditure is likely to be larger than that of two years ago, as several new vessels will probably be added to the fleet, at least such is recommended to Congress. The new vessels only cost $214,891 in 1896, while in 1897 the cost was $371,140. Showing a total increase of $33,813 for the last fiscal year.

OF what earthly use is the Bureau of American Republics, when we already have a Bureau of Foreign Commerce that properly fills the functions of its being. Frederic Emory, chief of the Bureau of the Foreign Commerce, Department of State, in a report to the Hon. John Sherman, Secretary of State, calls attention to the fact that five distinct classes of publications are issued by his bureau, and he now makes a requisition on Congress for an appropriation to issue more frequent or daily reports. This is all that is necessary, and the Bureau of American Republics should be squelched forthwith, as it is only a national advertising humbug, which the federal government has no right or reason to support out of the people's funds.

THE reduction in grain handling charges last year at Buffalo, brought about by a committee of the Lake Carriers Association, resulted in a saving to the vessel owners of $30,750 or fifty per cent. more than the entire annual dues, collected from the members of the association. If the foregoing is not a sufficient reason alone, for the Association being knit more firmly together, the leveling down of the exorbitant fueling charges and conditions which prevailed is sufficient to clinch any arguments relative to the expenditure of the aggregate dues levied by this Association. It can not be again said, that something like chaos would be now prevailing in many branches of the lake trade, had a vessel owners' association not been inaugurated and successfully supported.

HYDROGRAPHY.

The above caption, which so many of our readers have come to associate with the work being done in their interest by a department of the general government, is derived from the Greek, *hydor*, water, and *graph*, to write. A recent definition of hydrography is, "the science of the measurement and description of the sea, lakes, rivers, and other waters, with especial reference to their use for the purposes of navigation and commerce. It embraces pilotage and marine surveying, the determination of winds, currents, etc., as well as the art of forming charts exhibiting not only the sea-coast, gulfs, bays, islands, promontories, channels, and their configuration and geographical position, but also the contour of the bottom of the sea and of harbors. It also embraces the study of the relation of changes in depth to their causes."

Hydrography is, then, a description of the surface waters of the earth, practically confined to those that are navigable, including also the bearings of coasts, descriptions of currents, soundings, islands, shoals, etc.; and it has come to include anything the knowledge of which may be useful for purposes of navigation, thus embracing information relating to light, fog-signals, buoys damaged, displaced or adrift, derelicts, wreck and wreckage, and the probable limits and frequency of ice fields and bergs. It, consequently, includes the construction of charts (delineations of portions of the earth's surface in which the above particulars are detailed), for the use of navigators, and the preparation of books containing "sailing directions", which describe the navigable waters of the globe and include information regarding everything that a navigater may need to know to aid his skill in making his voyages safe and quick. The sailing directions give word descriptions of what is shown in a chart by the art of drawing, by conventional signs, words and figures; and directs the mariner how to avoid dangers and conduct his vessel in safety; and in addition, there is much information about storms, prevailing winds, resources of coasts and ports, etc., which cannot be shown in sufficient detail in the chart.

We read that in the fifteenth century, Henry the Navigator, a famous Portuguese prince and patron of early navigators, took the first step toward making hydrography a science when he constructed the first sea-chart worthy of the name. The science has come, from this early beginning, to be a matter of prime interest with all maritime nations of Europe and with our own country; and the hydrographic office is everywhere an important branch of the naval administration.

The hydrographic work was organized in the United States in 1830, under a "depot for the charts and instruments belonging to the navy". On the 21st of June, 1866, there was established, by act of Congress, "a Hydrographic Office for the Improvement of the means for navigating safely the vessels of the Navy and mercantile marine," which is the hydrographic office of to-day.

The hydrographer, at the head of the office, receives information, which is derived from many sources, and includes it in charts and sailing directions which are published as soon as may be. When it is important that information be given out immediately, it is done by means of printed notices to mariners which are distributed to individuals, and appears in the columns of the marine and other newspapers. The main sources from which hydrographic information comes are, first, the surveying parties sent out by various governments, and, second, the great body of navigators of all nations who conduct the vessels of commerce and of war on the waters of the sea, lakes and rivers of the world.

The maritime nations have the greatest interest in correct hydrography, and this leads them to make surveys not only of their own coasts but of those parts of the world where their vessels may go. Great Britain has surveyed and charted many remote parts of the world of waters, bordered by lands whose inhabitants through lack of ability, interests or funds have failed to perform this work for themselves. Our own government has given such employment to some of our naval vessels in the time of peace, the most recent and extensive work being the survey and charting of the Pacific coasts of Central America and Mexico, under the direction of the United States Hydrographic Office. It may be pertinent to remark here that the surveys of the sea coast of the United States are in charge of the U. S. Coast and Geodetic Survey (under the Treasury Department), naval officers detailed for duty under the Treasury Department doing all the work of taking soundings, and in some parts of Alaska executing triangulation work as well. A transfer of the work of the coast survey to the Hydrographic Office has lately been considered, but without action.

The contributions of hydrographic information by the mariners of the world have been of the highest importance, and may be said to have furnished occasions for many of the surveys made by governments in waters not their own. The great mass of hydrographic information becomes common property through co-operation between the various hydrographic offices and their contributing observers, in the first place, followed by co-operation between the various offices themselves. Is is impossible to speek too highly of the benefits of co-operation. The mariner who discovers a danger to navigation gives information of it to the hydrographic office with which he co-operates; warning is given to all mariners sailing those waters, and, through co-operation with foreign hydrographic offices, this danger which was first known to one man becomes known to the maritime world. In return co-operating brings to the discoverer of this danger inform ation of all dangers that may be found by others.

In the same order of co-operative work come the observations of the meteorological conditions that precede, accompany and follow gales and hurricanes. These contributions from the experience of numerous observers enable trained meteorologists to study out general rules by which the mariner may learn to recognize the approach of dangerous weather, and either seek shelter or so direct his course as to avoid the greatest severity of the storm. Similarly, observations of fogs make possible the determination of their character, frequency and extent in any given locality; and current observations help to show where currents exist, and how they are affected by varying conditions of wind and weather.

The general government has considered it wise to extend the work of the U. S. Hydrographic Office, as outlined above, to the Great Lakes, and during the past three seasons of navigation lake marine interests have enjoyed the benefits of a service that was previously confined to the sea. The branch Hydrographic Office at Chicago and Cleveland have won, through their successful efforts to be useful to the lake captains, a place in the esteem of most of them. Owing to the extent of territory to be covered, the work was necessarily not so well done as was desired; and, recognizing the broad fields for investigation afforded by Lake Huron, the Georgian Bay region, and Lake Superior, the government will have new branch offices (each in charge of a naval officer) in operation at Sault Ste. Marie and Duluth when navigation opens this season. The new Buffalo branch office, opened in November last, has already won the appreciation of the lake interests in that vicinity; and it will find its particular field (including the port of Buffalo and the Niagara river) in Lake Ontario and the St. Lawrence river. It will be the object of each of the five branch offices to get information from sources in all parts of the Great Lakes and tributary waters.

A considerable number of lake masters are now heartily co-operating with the Hydrographic Office, and it is hoped that the spirit of co-operation will possess all lake marine interests (including every lake captain) in the coming season, resulting in great good to all through substantial contributions to our knowledge of the physical geography of the Great Lakes.

FOREIGN BUILT YACHT.

The London Yachtsman, referring to the large steam yacht which George L. Watson is designing for Mr. James Gordon Bennett, proprietor of the New York Herald, says the vessel is intended to establish a yachting record across the Atlantic. According to the same authority she is to be 310 feet long, will be fitted with quadruple expansion engines, have 7,000 horse-power and exceptionally large bunkers, so as to enable her to be driven at full speed for long distances without coaling. The contract, it seems, calls for 15 knots' speed for the entire distance across the Atlantic.

We can't but think that Mr. Bennett should have been one of the last men to place a contract for fancy new tonnage abroad. The adopted country of his father has proved a "golden egg" to James, Jr., and he should be mindful of that fact, even if the more powerful incentive of patriotism is ignored. James Gordon Bennett owes all that he has been, and is, to this country and his favors, with the bulk of his ducats would be more appropriately circulated in the United States than Bonnie Scotland.

THE Department of Agriculture cost the country last year, $3,025,480, as follows: Salaries and expenses, $2,176,530; Weather Bureau, $848,950. The former item shows an increase over the previous year of $199,032 and the latter a decrease of $79,221.

LAKE CARRIERS' ASSOCIATION.

Annual Meeting at Detroit.

The annual meeting of the Lake Carriers' Associat on was opened January 19th, by the Secretary reading the report of the Board of Managers and the Treasurer. President James Millen in the chair. The report is as follows :

ANNUAL REPORT
OF THE
BOARD OF MANAGERS, LAKE CARRIERS' ASSOCIATION.

Office of the Lake Carriers' Association.
Buffalo, N. Y., January 15th, 1898.

To the Members of the Lake Carriers' Association:

The Board of Managers of the Association submits herewith its annual report of the proceedings and operations of the Association during the past year.

TONNAGE OF THE ASSOCIATION.

The tonnage enrolled on the books of the Association for the year just closed was 687,237, net registered tons. A comparison with the tonnage of former years is shown by the following table:

Tonnage of 1894	590,000
Tonnage of 1895	618,000
Tonnage of 1896	722,863
Tonnage of 1897	687,237

The tonnage of the past year has therefore been about 35,000 tons less than the tonnage of 1896, but largely exceeds the tonnage of any other year in the history of the Association. The decrease from 1896 is easily accounted for by the withdrawal of two good sized fleets who had heretofore always enrolled their boats. The fleet of Mr. J. C. Gilchrist, which exceeds 20,000 net tons, and the fleet of the Inter Ocean Transportation Company, formerly managed by Mr. J. C. Ricketson, and managed during the past year by Messrs. David Vance & Company, were not enrolled on our books during the past year. There were one or two other withdrawals of less consequence, and these, with a number of vessels lost and one or two fleets of small boats which did not go into commission at all during the past season, account for a loss of about 50,000 tons, which was partly made up by newly built vessels. An examination of the lists of the members of the Association shows the changes which are going on in the lake business. There is a gradual tendency on the part of the small vessels to drop out, but their place is more than filled by the larger tonnage of the class of vessels now building. On the whole, when the great depression in lake freights which prevailed during the season of 1896, and which has continued to a large extent during the season of 1897, is taken into consideration, it is gratifying to find that the tonnage of the Association has shown a very slight decrease from the top notch in its history.

FINANCES OF THE ASSOCIATION.

The Treasurer's report will be submitted to you, showing in detail the receipts and expenditures during the past twelve months. All that can be said of the exhibit made by the financial statement, is that it is better than that of the preceding year. At the last annual meeting the Treasurer reported a deficit of between four and five thousand dollars. A note of $1,000.00 was then owing to the Union Bank of Cleveland, and the Treasurer was obliged to borrow another $1000.00 from the same bank before the dues came in in May, 1897. In the face of the discouraging statement presented last year, the annual meeting in 1897 thought best to reduce the dues from 3 cents per net registered ton on all vessels to 3 cents on vessels whose net tonnage exceeds 1200 tons, and 2 cents on vessels whose tonnage is 1200 tons or less. At the beginning of the present year, therefore, the Association had to face a large indebtedness and a probable decrease of income. Some of the more sanguine members of the Association thought the decrease in the dues of the smaller class of vessels would lead to a larger enrollment of these vessels, but this view of the case failed to take into consideration the fact that the small vessels are becoming more and more unprofitable to operate, and the number of those in commission each season is growing smaller. As a matter of fact, a comparison of the tonnage lists for 1896 and 1897 shows that there were 225,000 tons of vessels under 1200 tons enrolled during the season of 1896 at 3 cents per net registered ton, while during the season of 1897 only 185,000 tons of this class of vessels were enrolled to pay dues of 2 cents per ton. As a matter of fact, of the 185,000 tons of small vessels enrolled during the past year, 113,000 tons were vessels belonging to members whose fleets in the main consist of the larger class of boats. Under the rule of the Association that members must enroll the whole of their tonnage or none, the smaller vessels followed the larger vessels into the Association. The tonnage of the fleets consisting entirely of the smaller vessels only amounted to 72,000 tons. The summary of the Treasurer's report shows that his receipts from all sources during the past year have amounted to $20,123.24, and the disbursements to $20,046.06, leaving a balance on hand of $77.18. The Association has unpaid liabilities at the present time amounting to $3,250.00. There is no other indebtedness of any kind in sight at present, but there will be about $170.00 of rents of shipping offices to pay before the first of May, and there will undoubtedly be some small incidental expenses for travelling and incidentals of the Secretary and Treasurer's office. The unpaid dues amount to $270.47, of which $229.00 is due from two members of the Association. A good part of the uncollected dues will undoubtedly be collected before the first of May, and in that event the Association will begin the season of navigation of 1898 with a total indebtedness slightly exceeding $3,000.00.

The Board of Managers think that this deficit of $3,000.00 ought to be wiped out during the coming year. It is probable that the tonnage of the Association will not show any great change, but that whatever change there is will be an increase. There will be some further withdrawals of the smaller vessels, which will be offset by the large boats now building for fleets which have always been members of the Association and can confidently be counted on for the future. The expenses of the Association during the past year for travelling, for delegations to Washington on legislative matters, and for miscellaneous items of all kinds, have been unusually small, and it is unlikely that they will be so slight another year. The only way to wipe out the deficit of the Association and start in another year without indebtedness, provided the income of the Association remains stationary, is to reduce the permanent expenses, and this problem will undoubtedly occupy the attention of the newly elected Board of Managers.

OPERATIONS OF THE SHIPPING OFFICES.

Shipping offices of the Association have been maintained during the past year at Cleveland, Chicago, South Chicago, Buffalo, Ashtabula, Toledo and Milwaukee. The following condensed report taken from the annual report of Shipping Master Rumsey, shows the number of men placed on board at all of these ports as follows:

Put on board at Cleveland	3,117
Sent from Cleveland to other ports	126
Put on board at Chicago	2,515
Sent from Chicago to South Chicago	13
Put on board at South Chicago	1,566
Put on board at Buffalo	1,745
Put on board at Ashtabula	1,623
Put on board at Toledo	1,049
Put on board at Milwaukee	1,385
Making a total of	13,139

men shipped at all the shipping offices, compared with 11,838 in the preceding year. The Cleveland shipping office shows a large growth of business, the number of men shipped last year being 3,170, compared with 1,503 in 1896. The South Chicago office shows a decrease in operations, the number of men shipped in 1897 having been 1,566, compared with 2,739 in 1896. The operations of the Milwaukee shipping office show a gratifying increase. This office was first established in 1896, and during that year it only shipped 453 men. During the past year 1,385 men have been put on board at Milwaukee. The attention of the members of the Association who do not use the shipping offices is called to the Shipping Master's report. Its examination will convince them that these offices do a very extensive work, and that they serve a most useful purpose. It cannot be doubted that the existence of such agencies for supplying vessels with necessary hands is of value not only to those who use the shipping offices, but to all other owners of lake vessels. An examination of the Treasurer's report shows that about $8,920.89 per annum of the Association's funds are required to maintain and operate these shipping offices. It has therefore cost the Association during the past year about 68 cents for each man put on board a vessel by a shipping office.

GRAIN SHOVELING AT BUFFALO.

At the annual meeting in 1897 the Lake Carriers' Association renewed its contract with James Kennedy of Buffalo to shovel all grain sent to that port in vessels of the Association. The scale of charges for shoveling remained as in former year, with a provision in the contract that any decrease in the rental of steam shovels should inure to the benefit of the vessels, and the contract price received by Mr. Kennedy should be diminished to that extent. A small committee was appointed at the annual meeting, with Mr. James J. H. Brown of Buffalo as chairman of the committee, to confer with the elevator people in Buffalo with a view to obtaining some concession in the shoveling charges at that port by securing a decrease in the rental of the steam shovels. After a somewhat prolonged negotiation, the elevator owners made a concession of 10%, or 15 cents per thousand, in the charge for the rental of steam shovels, and the vessel owners secured a reduction to that extent in the charge for handling grain. The grain receipts at the port of Buffalo during the past year, including flaxseed, but excluding flour, have been 205,000,000 bushels, and a reduction of 15 cents per thousand has therefore amounted to a saving in shoveling charges paid by vessels of $30,750. It will be noted by the members of the Association that this saving in shoveling charges last season is about 50% more than the entire annual dues collected from the members of the Association.

It may also be noted in this connection that during the past year the shippers of hard coal at Buffalo have generally required vessels chartered by them to purchase their fuel from the shipper, but no cases have been reported in which any attempt was made to charge vessels any more for fuel in such cases than the regular prices prevailing at the fueling docks not owned or controlled by the hard coal shippers. The abuses which prevailed in this business prior to 1896 have not re-appeared, and the fight which the Association made against the excessive charges for fuel at Buffalo appears to have been permanently successful.

PRIVATE LIGHTING IN 1897.

The Association has been able to reduce its expenses for private lights in the Detroit River during the season of 1897 to a smaller sum than has ever been expended for this purpose during any year in the history of the Association. The total expenses for private lighting in 1897 have been $2,941.42. It is not believed by the officers of the Association that any further reduction in this expense can be made for the present. There are no longer any private lights maintained on American soil or in American waters. The only lights which we now maintain are the range lights lighted by Duff & Gatfield above the Limekiln Crossing, the Hackett ranges at Amherstburg and the floating lights maintained by Hackett below the Crossing. These are all necessary, and the expense of maintaining them has been reduced to as low a figure as is consistent with their proper maintenance and supervision.

AIDS TO NAVIGATION.

Perhaps the most important feature of the work of the Lake Carriers' Association during the past year in the legislative field has been the success in the efforts of the Committee on Navigation in securing the lighting of lake channels and waterways on a very considerable scale by gas buoys. The officers and managers of the Association having this matter in charge have been working for several years to secure the appropriation for a considerable number of gas buoys on the lakes. After a number of disappointments, they succeeded last season, with the powerful assistance of Senator McMillan of Michigan, in securing a substantial appropriation for gas buoys, with a distinct provision in the appropriation bill that the buoys should be sent to the Great Lakes. Forty of these gas buoys have already been sent by the Lighthouse Board to the various lake light-house districts, and during the season of navigation just closed, twenty-nine of these have been in actual service, in addition to the two Canadian gas buoys in Point au Pelee Passage. The 29 located buoys have been established at the following points:

Seven buoys at various points in the St. Lawrence River between the foot of Lake Ontario and the port of Ogdensburg.

One gas buoy on Charity Shoal, Lake Ontario.

Two gas buoys in Erie Harbor.

One gas buoy on Starve Island Reef, Lake Erie.

Two gas buoys in Maumee Bay, Toledo Harbor, Lake Erie.

Three gas buoys at Ballard's Reef Channel, Detroit River.

One gas buoy on the northwesterly side of the lower entrance to twenty-foot channel, Lake St. Clair.

One gas buoy on the Port Huron Middle Ground, St. Clair River.

One gas buoy at Detour Reef, Lake Huron, at westerly side of entrance to St. Mary's River.

One gas buoy at the turning point in Mud Lake, St. Mary's River.

One gas buoy at the turning point, Dark Hole, St. Mary's River.

One gas buoy at Hay Lake Channel, entrance northerly end of Little Mud Lake, St. Mary's River.

One gas buoy on Round Island to Middle Ground, St. Mary's River.

One gas buoy on Fishermen's Shoal, Lake Michigan.

One gas buoy on Wiggin's Point Shoal, Lake Michigan.

One gas buoy on Lansing Shoal, north of Squaw Island, Lake Michigan.

One gas buoy at Poverty Island Shoal, entrance to Green Bay, Michigan.

One gas buoy on Gravelly Island Shoal, entrance to Green Bay, Lake Michigan.

One gas buoy on Whaleback Shoal, Green Bay, Lake Michigan.

There are seventeen other points on the lakes where gas buoys are still needed, and where their establishment has been recommended by the light-house officials in charge of the various lake districts. The Board of Managers hopes that a moderate appropriation can be obtained from Congress at this session which will provide part if not all of these additional gas buoys.

These gas buoys are very heavy, bulky and awkward affairs to handle, and when you remember that they have to be taken up every fall and placed again every spring, that they have to be kept supplied with gas, and replaced on their stations if they become in any way displaced, and that they cover a territory stretching from the St. Lawrence River to Lake Superior, and also into Lake Michigan, so that a vessel in visiting all these buoys would travel about 2,000 miles, it will readily be understood that the establishment of so large a number of gas buoys has placed upon the Light-House Board a large amount of extra labor and taxed their present facilities to the utmost. It is understood that the board is favorable to the extension of this system of lighting, and desires to make the proper provision for the handling and care of these buoys. The Lake Carriers' Association should do everything in its power to assist the Light-House

Board in securing proper facilities of this kind, and if the board decides to ask Congress for an appropriation for an additional vessel for light house service on the lakes, so as to permit one of the present light house tenders to be fitted up exclusively for work in connection with gas buoys, the officers of the Association will do all in their power to secure the necessary funds from Congress for this purpose. During the past season the Chairman and Naval Secretary of the Light-House Board have both made extensive tours of the lakes, and have in every way manifested the greatest interest in the improvement of the lighting system.

CHANNEL IMPROVEMENTS.

Early in the present season of navigation the Lake Carriers' Association made an investigation of the present condition of the channel improvements in the Detroit, St. Clair and St. Mary's Rivers, at the suggestion of the Hon. Russell A. Alger, Secretary of War, with a view to calling his attention to the condition of the work and the necessity of any supplemental improvements to perfect the great work which the Government has undertaken. In making this investigation the officers of the Association did not have in mind any further deepening of the channels, but rather the process of widening them and rounding off the corners at the turns, so as to make them safer. The ship channel west of Buffalo, upon which the Government has been engaged for many years, was a project outlined in the first instance by Gen. Poe. He fully understood that in certain places the improvements which he outlined were not final in character, and that the channels provided at such places were not of sufficient width for the accommodation of the increasing commerce which would pass through them. Where a sufficient width could be provided at a moderate expense, Gen. Poe made his channels wide, as at the foot of Lake Huron, but where the work was very expensive in character, his idea was to give a narrow channel at first, leaving further improvement to the future. In August last the report of the Lake Carriers' Association was presented to the Secretary of War, containing the following recommendations:

First: That the cut at Limekiln Crossing, which is now 440 feet wide, with quite a sharp turn at each end, be widened to 600 feet, and the angles above and below be cut off so as to make easy approaches;

Second: That the channel at Ballards Reef, which is now being cleaned out to a width of 300 feet, be widened to 600 feet. This work would not consist of excavating solid rock, but of cleaning out bowlders and small shoals. It is as urgently needed as any on the Lakes;

Third: That another channel 300 feet in width be constructed as St. Clair Flats Canal, just to the west of the present channel, with an approach of corresponding width below the Canal. The approach above is now ample for both channels;

Fourth: That a few shoal spots in the St. Clair River, especially those in the American channel, on the west side of Stag Island and at the Middle Ground, which encroaches on the channel at the mouth of Black River, Port Huron, be removed;

Fifth: That in the St. Mary's River the existing channels by way of the Middle Neebish, which have a width of 300 to 350 feet at Sailors' Encampment, Dark Hole and Middle Neebish Cut, be widened to 600 feet, or else that a new project should be taken up and adopted for the improvement of a channel through the West Neebish. There is no doubt that the latter course would provide a safer channel than can ever be provided through the Middle Neebish, and that a distance of seven miles can also be saved in this way. Down bound boats could use the West Neebish channel, and up bound craft could follow the present channel through the Middle Neebish. The improvement of the West Neebish is an undertaking of considerable magnitude, but if it is not undertaken the improvement of the Middle Neebish is imperatively necessary.

LEGISLATION FOR THE BENEFIT OF AMERICAN SHIPPING.

During the past year an organized movement of all the interests connected with shipping in this country has been undertaken, with a view to preparing a bill to be introduced in Congress, which should contain provisions adequate to promote the building up of an American Merchant Marine in keeping with the resources and developments of the country in other directions, and which should at the same time deal fairly with all vessel and shipbuilding. The Lake Carriers' Association was invited to join this movement, and at a meeting of the Committee on Legislation, a sub-committee, consisting of Mr. Frank J. Firth, of Philadelphia, and the Secretary and Counsel of the Association, was appointed to take part in this work. A preliminary conference was held at which the leading American ship builders and the large vessel interests on the coast and lakes were fully represented. Mr. Clement A. Griscom, of Philadelphia, President of the American Line, is chairman of the conference. A great deal of work has been done, and it is expected that a measure for the building up of an American Merchant Marine will soon be agreed upon, which can be presented to Congress with the unanimous support of all the great maritime interests in this country.

EXTENSIONS OF WATER TRANSPORTATION FROM LAKE ERIE TO THE SEA.

The present year has seen three important events in the history of the project for securing adequate water transportation from the eastern end of Lake Erie to the sea. In the first place, the State of New York has undertaken to deepen the Erie Canal two feet, thus increasing the carrying capacity of canal boats from 33 to 50 per cent. About one-half of the work to be done to secure this result is under contract. It is now found that a much larger sum will be required to complete the work than was expected, and that the nine million dollars voted by the people of the state for this purpose will secure no practical result, unless at least eight million dollars additional is added thereto. Probably the expenditure of the eight million dollars additional will have to be submitted to the people for another vote, and even if the result is favorable to the project, it is evident that fully five years must elapse before the improvement now projected will be completed. Approximately $20,000,000 will then have been spent to secure an additional depth of two feet in the waterway now existing from Buffalo to the Hudson River. The cost of this work throws a good deal of light upon the cost of the ship canal from the Great Lakes to the Sea which has been heretofore proposed. Secondly, Congress, at its last session, appropriated $100,000 for a preliminary survey of the proposed ship canal. A commission has been appointed to undertake this work, and the work is now proceeding. Thirdly, Just before the appointment of this Commission, the War Department called upon Maj. T. W. Symonds, of the United States Engineers, for a preliminary examination and report, giving such information as was available and such facts as could be secured regarding the worthiness of the contemplated ship canal. In an exhaustive report, Maj. Symonds advances the opinion, that the Erie Canal when enlarged under existing plans of the State of New York, will, if all restrictions imposed by the State upon its use, are removed, give commercial advantages practically equal to the commercial advantages that would be given by the proposed ship canal; that if the Erie Canal be further improved by enlargement to a size sufficient for 1500 ton barges, making necessary alterations in its alignments so as to give a continually descending canal all the way from Lake Erie to the Hudson, and canalizing the Mohawk River, the canal so improved, navigated by barges, would enable freight to be transported between the East and the West at a lower rate than by a ship canal navigated by larger lake or ocean vessels. Maj. Symonds reports that such an enlargement of the Erie Canal as suggested is a project worthy to be undertaken by the general government, as the benefits derived therefrom would be commensurate with the cost. The cost is estimated at approximately $50,000,000. As to the proposed twenty-foot ship canal from Lake Erie to the sea board by way of Niagara River, Lake Ontario, Oneida Lake, the Mohawk and Hudson Rivers, which he finds to be the best route, Maj. Symonds is of the opinion that the construction of such a canal would cost at least $200,000,000, and $2,000,000 each year for maintenance. He is further of the opinion that the construction of such a canal is not a project worthy of being undertaken by the general government, as the benefits derived therefrom would not be commensurate with the cost. Maj. Symonds reaches the conclusion that the large vessels now in use on the Lakes cannot conduct transportation economically through a long and narrow waterway, with many locks, such as any canal between the Lakes and the sea must necessarily be. He reaches the further conclusion that the vessels now in use on the ocean cannot conduct transportation economically in such a canal or on the Lakes. For canal traffic, he reaches the conclusion that a proper aggregation of vessels much smaller, lighter and cheaper than either lake or ocean vessels, can conduct transportation at much less expense. He further believes that if any canal is to be built, it should be built to accommodate the last named type of vessels, rather than the large ocean steamship or the modern lake steamer.

MATTERS TO BE CONSIDERED AT THE ANNUAL MEETING.

In addition to the business of electing officers and selecting committees for the ensuing year, and the letting of the contract for grain shovelling at Buffalo for the season of 1898, it is evident that the annual meeting will consider carefully the subject of the possible partial control of Lake freights by organized action among vessel owners. As the call for this meeting stated, it is not possible for the Lake Carriers' Association, as a body, to take any action which will bind its members in the management of their vessel property. Any action to be taken must be individual action by vessel owners. Such action must be participated in by a very large proportion of the lake tonnage. If such an agreement is drawn up and generally signed, its operation must be carefully watched and scrutinized at every point if beneficial results are to be obtained. While, however, the Lake Carriers' Association as such can take no action to control freights, it is clear that the annual meeting is the proper place, indeed the only possible place, to discuss and decide upon any concerted action by vessel owners on this subject. At a recent meeting of the Finance Committee of the Association, held at Cleveland, a large and influential committee, composed of many of the leading men in the lake business, was appointed to consider and discuss this matter carefully before the annual meeting, with a view to the presentation at the meeting of some well-defined ideas.

The Association, in closing this record of an unusually quiet and uneventful year in its history, desires to express its obligations to Hon. Russell A. Alger, Secretary of War, and Senators McMillan and Hanna for their intelligent interest in all matters pertaining to the welfare of the lake marine. On several occasions during the past year the officers and managers of the Association have appealed to them for assistance in matters pending before Congress or in the departments at Washington. In every instance all that could be done by prompt and vigorous action on their part was done, and done immediately. The Board of Managers considers it most fortunate that three men so well acquainted with all the needs of the lake commerce occupy positions in the National Government of such prominence and influence.

Respectfully submitted by the Board of Managers,

JAMES W. MILLEN, President.
CHARLES H. KEEP, Secretary.

The a tendance was the largest ever known in the history of this association, and the entire lakes were well represented. The report was promptly accepted and unanimously carried. The next business of the meeting was the nomination of president. Mr. Wm. Livingstone, ex-president of the association, in a pleasant adddress, and with considerable oratorical effect nominated Capt. J. S. Dunham, of Chicago, seconded by Capt. John Mitchell, also ably endorsed by C. W. Elphicke, Mr. B. L. P nnington and elected by a standing vote. Mr. Wm. Livingstone and Capt. John Mitchell then escorted President James Dunham to the chair, who delivered an excellent address on his induct on to the office of the president of the Lake Carriers' Association.

Capt. James Davidson then made a motion that a hearty vote of thanks be extended to the retiring president, Capt. James Millen, which was unanimously endorsed, and courteously replied to by the ex-president.

By the request of Capt. Dunham, the retiring president, Capt. Millen, was asked to resume the chair until after the complete election of officers for the ensuing term.

The president appointed the following committee: C. W. Elphick, David Vance, A. B. Wolvin, James Davidson, Lewis C. Waldo, James Corrigan, and J. J. H. Brown, to nominate the vice-presidents and board of managers. The committee reported as follows:

VICE PRESIDENTS.

H. H. Hawgood,	Cleveland	Leander Burdick,	Toledo
David Vance,	Milwaukee	M. J. Cummings,	Oswego
C. W. Elphicke,	Chicago	Alvin Neal,	Port Huron
A. A. Parker,	Detroit	James McBrier,	Erie
G. L. Douglas,	Buffalo	J. H. Westbrook,	Ogdensburg
G. A. Tomlinson,	Duluth	F. W. Gilchrist,	Alpena
Chas. A. Eddy,	Bay City	G. E. Tener,	Fairport
F. J. Firth,	Philadelphia		

SECRETARY.

CHARLES H. KEEP, Buffalo

TREASURER.

GEORGE P. MCKAY, Cleveland

COUNSEL.

HARVEY D. GOULDER, Cleveland

BOARD OF MANAGERS.

E. Gaskin,	Buffalo	L. C. Waldo,	Detroit
Peter P. Miller,	Buffalo	J. W. Westcott,	Detroit
E. T. Evans,	Buffalo	D. T. Helm,	Chicago
G. L. Douglas,	Buffalo	Jesse Spaulding,	Chicago
Charles Paine,	Buffalo	J. S. Dunham,	Chicago
J. J. H. Brown,	Buffalo	John Keith,	Chicago
John Kelderhouse,	Buffalo	Joseph Austrian,	Chicago
W. H. Gratwick,	Buffalo	W. R. Owen,	Chicago
M. M. Drake,	Buffalo	C. W. Elphicke,	Chicago
W. P. Henry,	Buffalo	Wiley M. Egan,	Chicago
Edward Smith,	Buffalo	J. J. Rardon,	Chicago
W. C. Farrington,	Buffalo	J. H. Channon	Chicago
H. C. French,	Buffalo	James A. Calbick,	Chicago
C. H. Donaldson,	Buffalo	W. S. Brainard,	Toledo
James McKenzie,	Buffalo	A. W. Colton,	Toledo
Thos. Wilson,	Cleveland	Leander Burdick,	Toledo
M. A. Bradley,	Cleveland	D. S. Sullivan,	Toledo
James Corrigan,	Cleveland	James Davidson,	Bay City
H. M. Hanna,	Cleveland	Charles A. Eddy,	Bay City
Geo. P. McKay,	Cleveland	O. W. Blodgett,	Bay City
H. G. Dalton,	Cleveland	F. W. Wheeler,	Bay City
Harvey H. Brown,	Cleveland	B. Boutelle,	Bay City
John W. Moore,	Cleveland	Thomas Cranage,	Bay City
B. L. Pennington,	Cleveland	Howard L. Shaw,	Bay City
John Corrigan,	Cleveland	J. W. McGraw,	Bay City
Wm. Gerlach,	Cleveland	Alex. McDougall,	Duluth
Henry A. Hawgood,	Cleveland	F. N. La Salle,	Duluth
W. C. Richardson,	Cleveland	G. A. Tomlinson,	Duluth
J. C. Gilchrist,	Cleveland	A. B. Wolvin,	Duluth
W. D. Rees,	Cleveland	David Vance,	Milwaukee
John Mitchell,	Cleveland	R. P. Fitzgerald,	Milwaukee
R. R. Rhodes,	Cleveland	H. J. Pauly,	Milwaukee
Caleb E. Gowan,	Cleveland	W. H. Wolf,	Milwaukee
L. M. Bowers,	Cleveland	W. H. Meyer,	Milwaukee
W. H. Becker,	Cleveland	James McBrier,	Erie
W. A. Hawgood,	Cleveland	Geo. Berriman,	Erie
W. H. Mack,	Cleveland	F. W. Gilchrist,	Alpena
C. E. Benham,	Cleveland	Alvin Neal,	Port Huron
C. F. Palmer,	Cleveland	C. T. Morley,	Marine City
William Livingstone, Jr.,	Detroit	R. E. Schuck,	Sandusky
David Carter,	Detroit	Frank J. Firth,	Philadelphia
D. C. Whitney,	Detroit	J. H. Westbrook,	Ogdensburg
W. A. Livingstone,	Detroit	G. E. Tener,	Fairport
A. A. Parker,	Detroit		

EXECUTIVE COMMITTEE.

James Corrigan,	Cleveland	William Gerlach,	Cleveland
H. A. Hawgood,	Cleveland	L. C. Waldo,	Detroit
Thos. Wilson,	Cleveland	D. C. Whitney,	Detroit
M. A. Bradley,	Cleveland	W. P. Henry,	Buffalo
L. M. Bowers,	Cleveland	J. J. H. Brown,	Buffalo
H. G. Dalton,	Cleveland	R. P. Fitzgerald,	Milwaukee
W. C. Richardson,	Cleveland	C. W. Elphicke,	Chicago
B. L. Pennington,	Cleveland		

COMMITTEE ON AIDS TO NAVIGATION.

George P. McKay,	Cleveland	W. M. Egan,	Chicago
W. H. Becker,	Cleveland	W. A. Livingtone,	Detroit
John W. Moore,	Cleveland	J. H. Westbrook,	Ogdensburg
W. A. Hawgood,	Cleveland	A. W. Colton,	Toledo
Thos. Wilson,	Cleveland	James Davidson,	West Bay City
C. E. Benham,	Cleveland	Alvin Neal,	Port Huron
H. Coulby,	Cleveland	M. M. Drake,	Buffalo
J. G. Keith,	Chicago	W. W. Smith,	Sault Ste Marie

COMMITTEE ON LEGISLATION.

G. L. Douglas,	Buffalo	Wm. Livingstone,	Detroit
E. T. Evans,	Buffalo	C. A. Eddy,	Bay City
P. P. Miller,	Buffalo	Alex. McDougall,	West Superior
H. C. French,	Buffalo	F. J. Firth,	Philadelphia
Charles Paine,	Buffalo	Jas. E. Davidson,	Bay City
Edward Smith,	Buffalo	D. Sullivan,	Chicago
L. C. Hanna,	Cleveland	W. E. Fitzgerald,	Milwaukee
James Corrigan,	Cleveland		

Moved by Capt. James Davidson that the nomination of officers as reported by the committee be accepted, duly seconded and carried.

Mr. Hawgood made a motion seconded by Capt. James Davidson that the counsel, secretary and treasurer be continued in office for another year, which was carried. At 1 p. m. the meeting adjourned till 2 p. m. Capt. Dunham, the newly elected president, invited all members to attend a banquet in the evening.

Edward Smith made the motion to make the annual rates the same as last year, the motion was seconded by Capt. C. E. Benham, Mr. James Corrigan and Mr. B. L. Pennington. Capt. Davidson talked on the question at some length. The rate was made same as last year, viz., 3 cents on large tonnage, for vessels of 1200 tons and over, and 2 cents per ton for all vessels under that figure.

On the question of grain shoveling, brought forward by Mr. James Corrigan. J. E. Davidson moved that a committee of five members be appointed to consider this matter and report to the convention. J. J. H. Brown amended the motion, so that seven members should be appointed. Mr. James Corrigan remarked that a free competition was desirable and that all parties should be heard from and given the same consideration in competing for the grain discharging charges at Buffalo. Mr. B. L. Pennington spoke in favor of a reduction of charges, and that the grain trade should not be allowed to go via the Southern route through high charges being made at Buffalo. Mr. Hawgood moved an amendment that the committee be increased to nine members. Mr. Green suggested going into committee of the whole, Mr. John Corrigan supported the suggestion. Capt. Millen asked that a committee be appointed to report to the convention in executive session assembled, seconded by Mr. Coulby, and duly carried.

Mr. Coulby moved that a committee be appointed to look into the question of modifying the Sault Ste. Marie river sailing and steering rules, and the chair to appoint a committee of five on same. The president appointed on this committee, H. Coulby, G. P. McKay, James Millen, Alex McDougall and, Capt. Morton.

Mr. W. I. Babcock, on behalf of the Chicago Ship Building Co., asked whether he could represent his firm, who were vessel owners to some extent in several vessels, or whether the managing owner alone has to represent the whole tonnage in association matters. Counsel Harvey D. Goulder endeavored to elucidate the rules and bye-laws of the association. Mr. A. B. Wolvin, of Duluth, brought the discussion to a close by making a motion that the managing owner represent the tonnage solely, and his motion being seconded the meeting adopted the motion made by Mr. Wolvin.

Capt. A. B. Davis, of the revenue cutter service addressed the meeting briefly at this stage, and stated that in his judgment the rules now in force on the Sault Ste Marie river ought to be altered as previously suggested. Capt. Davis, of the revenue cutter service, was requested to meet with the committee of the Lake Carriers' Association relative to modifying the "Soo" river rules, and report later.

It was moved and seconded that a committee of five be appointed to fix the salaries of the officers of the association.

Capt. Jas. Davidson moved that a committee of three members be appointed to endeavor to secure a reduction of Lake Ontario grain discharging charges, as ¼ cent a bushel more elevator charges were made at Lake Ontario ports than elsewhere.

The committee appointed on the grain shoveling question was named by the chair as follows: Jas. E. Davidson, Jas. Corrigan, David Vance, C. W. Elphicke, L. M. Bowers, A. B. Wolvin, James Millen, H. A. Hawgood, H. Coulby.

Mr. Livingstone read a communication from the Ogdensburg Transit Co., which was referred to the committee on navigation.

At a meeting held in the City Hall in the City of Ogdensburg, N. Y., on Dec. 16, 1897, wherein were assembled the masters and owners of various lake steamers then lying in the said port of Ogdensburg, for the purpose of arguing the necessity of the establishment of better aids to navigation on the Great Lakes and the St. Lawrence river the following resolutions were passed:

Whereas, The lake carrying trade has increased to such magnitude and importance as entitles it to the careful protection and encouragement of government, we feel justified in pointing out the necessity for certain aids to the carrying on of said trade. The change in the character and type of lake craft has brought about a change of conditions which both the American and Canadian governments ought to provide for at once. The enlargement of the lower Canadian canals promises a still greater increase in the volume of trade in the St. Lawrence river. And we submit that it is the duty of both governments to furnish all reasonable safeguards and aids for the vessels carrying on this trade.

Many large and valuable steamers have been lost in the St. Lawrence river and in the lower part of Lake Ontario in places where proper marks would make navigation comparatively safe. Within a few weeks the fine steel steamship Rosedale, after performing a long voyage, was wrecked within a few hours of her home port on a dangerous reef called Charity Shoal. The risk of such casualities could be reduced to a minimum by the placing of proper marks and lights, and it is therefore by us

Resolved, that we request and urge the immediate establishment of the following aids to navigation: A light-ship on East Charity shoal, light-ship on Niagara outer shoal, and one on Galoup shoal. A gas buoy near Cole's ferry light-house, and one on a seven foot shoal in Jones Narrows. A light-house on the main Ducks, a light-house on the northerly point of Carlton Island. Buoys to aid in entering the tower harbor at Ogdensburg. Range lights in the St. Lawrence river on the ranges between Dark Island and Cross Over light. Cross Over light to Bay State Shoal, and Bay State Shoal to Jones Narrow. A correction of the range lights at Port Colborne, where the same have by reason of low water been rendered obsolete and useless. A steam fog whistle at Port Dalhousie.

We further strongly urge the necessity of a thorough survey of the St. Lawrence river, and that charts of the deep water channels thereof be furnished all masters and pilots.

It is further resolved, that a copy of this memorial be transmitted to the United States Government through the honorable Representatives from this district, to the Canadian Government, to the Lake Carriers Association, to the Ship Masters' Associations of the United States and Canada.—Signed by the Mayor of Ogdensburg and a large number of managing owners of vessel property and masters.

The chair appointed the committee on salaries as follows: James Millen, James Corrigan, H. A. Hawgood, A. B. Wolvin, J. J. H. Brown.

The committee on Lake Ontario grain shoveling charges were named as follows: James Davidson, J. H. Calbick, E. C. Recor. At 4:00 p. m. the meeting adjourned until 10:00 a. m. Thursday, the members being invited to attend an address by H. F. J. Porter, of the Bethlehem Iron Works, Bethlehem, Pa., on "Hollow Steel Forgings."

On Thursday morning the meeting opened with a brief address by president James S. Dunham, it was then moved by counsel H. D. Goulder, seconded by Capt. Davidson, and duly carried that the association go into committee of the whole, when the grain shoveling committee reported. A communication from the Goodrich Co., Chicago, relative to gas buoys, etc., was referred to the committee on navigation. The Western Transit Co., Buffalo, sent for the consideration of the association, a proposed revised libel law, its principal feature being that a financial guarantee could be lodged or filed within the jurisdiction of any district court, in advance, so as to obviate the frequent libels and seizures, for usually paltry claims. It was pointed out however that it would be necessary to file a bond in each district. The question and situation relative to the merits and demerits of the proposed bill was ably set forth by counsel Harvey D. Goulder, also the secretary of the association C. H. Keep, Esq., proctor in admiralty, C. E. Kremer, Chicago, made certain remarks relative to the intended measure, and finally it was decided, on motion, to place the bill in the hands of the legislative committee and executive officers of the association for future action.

The discussion on libel laws being ended, the committee on grain shoveling charges reported and the convention went into executive session as a committee of the whole, members of the Association only being permitted to attend or take part in the discussion, which resulted in the contract being awarded to W. J. Connors, of Buffalo, on his bid of $2.95 per thousand bushels, his competitor, Mr. Kennedy, who had done the work for the past two seasons offering similar terms, and the meeting adjourned at 1:30 for a recess.

On reassembling at 3 p. m., the report of the committee appointed to modify the rules for navigating the Sault Ste. Marie river was adopted, as follows:

"Amend rule 1 to read: 'No vessel ascending or descending the St. Mary's river shall proceed at a greater speed than nine statute miles an hour over the ground between the following named points: Between the turning channel buoy in the northern part of Mud Lake and the northern float lights of the twenty-foot channel in Hay Lake, leading from the Neebish channel, and between the crib lake at the southern entrance of the upper twenty-foot and Little Rapids channels and the government pier at Sault Ste. Marie and between the western piers and Point Aux Pins.'

"'No vessel shall approach another vessel going in the same direction nearer than one quarter of a statute mile between the points named in rule 1, excepting the following points: Turning channel buoy in Mud Lake and Everen's Point, between the northern end of the Dark Hole and black buoy No. 29, in Little Mud Lake, and between the crib light at the northern entrance of Little Rapid cut and the government pier at Sault Ste. Marie. In passing the the above permissible points no vessel shall increase her speed over nine miles an hour.'

"Amend rule 4 by striking out in the fourth line from the bottom 'at no nearer distance than 500 feet' and in place thereof insert the following: 'Any vessel in passing another must not crowd upon the vessel being passed.'"

On motion of Mr. Goulder, duly seconded, the following committee was appointed to draft a uniform bill of lading for grain cargoes: C. H. Donaldson, C. W. Elphicke, A. B. Wolvin, C. H. Keep, and H. A. Hawgood. The committee appointed at a special meeting of the executive committee a few weeks ago to take up the minimum freight rate question reported that it was not a proper subject for the association to handle, but that it would be a wise move for individual owners to take it up. The committee on salaries decided not to take any action and the matter will be attended to by the executive committee as in former years.

On motion of Mr. Livingstone, of Detroit, seconded by Mr. Goulder, of Cleveland, the chairman was empowered to appoint a committee composed of a member from each of the leading ports to solicit funds for the erection of a monument, tablet or other suitable memorial at the "Soo" in honor of the late Gen. O. M. Poe, Corps of Engineers, U. S. A. The following are the members of the committee: W. Livingstone, of Detroit; C. H. Keep, of Buffalo; J. S. Dunham, of Chicago; H. H. Brown, of Cleveland; C. A. Eddy, of Bay City; H. D. Goulder, of Cleveland; David Vance, of Milwaukee; A. B. Wolvin, of Duluth; C. H. Westbrook, of Ogdensburg.

On motion, a committee was appointed to look after the interests of vessel owners relative to the trimming and discharging charges on cargoes of iron ore. The committee was named as follows: Messrs. B. L. Pennington, M. A. Bradley, T. Maytham, H. H. Mack, John Corrigan, C. E. Benham and Edward Smith.

The association adopted resolutions favoring the enlarging of the Erie canal locks so as to accommodate boats that can carry 25,000 bushels.

On motion of Capt. Benham, seconded by Capt. Geo. P. McKay, the resolution carried that it was the sense of the meeting that no changes be made in the present navigation rules now in operation.

On motion of Capt. James Corrigan the resolution carried that a vote of thanks be tended Mr. Kennedy, of Buffalo, for the able, efficient and generally trustworthy manner in which he had preformed his contract with the association, in discharging grain at Buffalo. Mr. Connors addressed the association briefly and assured the menbers of the association that nothing should be left undone towards carrying out faithfully the contract which he had that day entered upon with the association.

A vote of thanks to the several officers for their excellent and pariseworthy services and efforts in behalf of the association met with a unanimous response, and there being no further business to come before the meeting the convention adjourned, sine die.

HOLLOW STEEL FORGINGS.

On Wednesday evening Mr. F. H. J. Porter, Bethlehem, Pa., delivered a very instructive and entertaining address before the members of the Lake Carriers' Association.

Mr. Porter said in part: "It is not much more than 20 years ago since steel began to be used for heavy machinery. About 12 years ago the Bethlehem Iron Co., which was already well known in the iron world showed their appreciation of the conditions then forming by establishing a forging plant especially adapted to the turning out of steel forgings only, and of a capacity to meet any demand that might be made upon it for either the commercial or government work of any country, and ever since that time this company has been adding special appliances as required so that the plant has been kept busy on the lines for which the output was constructed, not only in supplying armor plate for the government, but in making shafts, cylinders, etc.

Without entering specifically into the processes used in forging iron and steel it may be stated in general terms that with iron advantage is taken of its property of welding. Small pieces, previously heated, are piled one upon the other and pressed together to form the finished piece. On

the other hand steel does not possess this quality and a piece large enough to make the finished forging must be obtained at the start.

The various ingredients of the steel, having been analyzed to determine the proportions they should be mixed, are melted in an open-hearth furnace. The furnace is a rectangular basin of from 10 to 40 tons capacity, heated by gas so regulated in its supply that the temperature of the liquid mixture may be increased or diminished or held stationary to suit conditions. By thus controlling the heat, some impurities can be burned out, others being allowed to remain in certain proportions. Thus from ten to fifteen hundredths of one per cent. of carbon makes a grade of steel that differs little in its strength from wrought iron, while an increase in its percentage up to a certain limit, tends to make it stronger, and beyond that to make it hard and brittle. Too much phosphorus tends to make it brittle when cold, and sulphur to make it so brittle when hot that it cannot be forged properly.

By the title of this paper I do not refer to steel forgings that have been forged solid under a hammer or press and subsequently bored, but to those which have been forged hollow. In order that the metal should be sufficiently worked to give it strength and toughness, the best practice requires that the ingot should be at least twice the diameter of the finished forging, a 24-inch or 36-inch shaft or roll would, for instance, be worked down from a 48-inch or 72-inch ingot. Ingots of these sizes are liable to surface defects, blow holes, piping, and segregation.

Of all the various methods which have been devised to secure solid and homogeneous ingots, without doubt the most efficient and most to be depended upon is the Whitworth process of fluid compression. This consists in subjecting the metal in the mold, while fluid, to hydraulic pressure up to 7,000 tons, if necessary. This pressure is continued until the metal is solid throughout, great care being taken to cool the ingot slowly and equally on all sides. After it has been cooled and the upper part has been cut off, a hole nearly the size required in the finished forging is bored through it. This boring out of the center takes away that portion of the ingot where impurities may have concentrated and where there may have been tendency toward piping.

We have now a piece of steel which is as nearly perfect as can be produced, and it is ready for the forging process. First it must be reheated, and as much care has to be taken in this process as was taken in its cooling. The heat must penetrate slowly and uniformly. Its shape, however, is in its favor. The hole in the center removes the danger of cracks starting in that part, owing to the rapid expansion of the exterior, because of its more rapid heating. After being reheated a mandrel of the proper size to fit loosely into the hole is inserted, and the piece is taken to the press, where it is drawn out over the mandrel to the required dimensions.

With the substitution in the trade of steel for wrought iron in engine and miscellaneous forgings, the tendency has naturally been to use a mild or soft steel approaching iron as regards physical qualities and in the ease in which it can be machined. Wrought iron has a low elastic limit, averaging about 20,000 pounds per square inch in large sections, where proper care is taken in its production. Mild steel, when of good quality, is superior to wrought iron in strength, toughness and homogeniety, and freedom from danger of imperfect welds, and porous spots enclosing slag and scale; but it does not possess the very desirable quality of high elastic strength combined with ductility or toughness in as great a degree as can be obtained without danger in a harder steel, when proper precautions are taken in its manufacture. In other words in the use of ordinary mild steel only a partial advantage is taken of the most desirable qualities of steel, which are easily within reach. In some instances, where the amount of machine work in finishing is very great, and there is ample margin of safety in the design, as for instance, is often the case with connecting-rods, the use of mild steel may be advisable. Such steel contains about 0.20 to 0.25 per cent. of carbon and can be guaranteed to show in specimens four diameters in length cut from a full-size prolongation of forgings or from representative pieces, a tensile strength of not less than 57,000 pounds per square inch, and an elastic limit of not less than 27,000 pounds per square inch, with an average elongation of 25 per cent. For the general run of engine forgings, however, a harder steel should be used, in which a tensile strength of about 75,000 pounds and an elastic limit of about 35,000 pounds per square inch can be obtained, together with an average elongation of 20 per cent. in four diameters.

When proper precautions are used, forgings can be made with perfect safety to a still higher grade of steel, and this is especially recommended for crank and crosshead pins, and for all parts subjected to severe alternating strains and wearing action. In this grade of steel a tensile strength of about 85,000 pounds and an elastic limit of about 40,000 pounds per square inch can be obtained, with an elongation of 15 per cent. in four diameters. If steel forgings are tempered they can be furnished with a tensile strength of 85,000 to 90,000 pounds and an elastic limit of 45,000 to 55,000 pounds per square inch, and an elongation of 15 to 20 per cent. in four diameters. By introducing about 3 per cent. of nickel into the composition of steel a finely granular or amorphous condition is obtained in forgings, and the very highest quality of steel is obtained. By the combination of hollow forging and tempering this nickel steel a result is obtained excelling all others known in elastic strength and toughness.

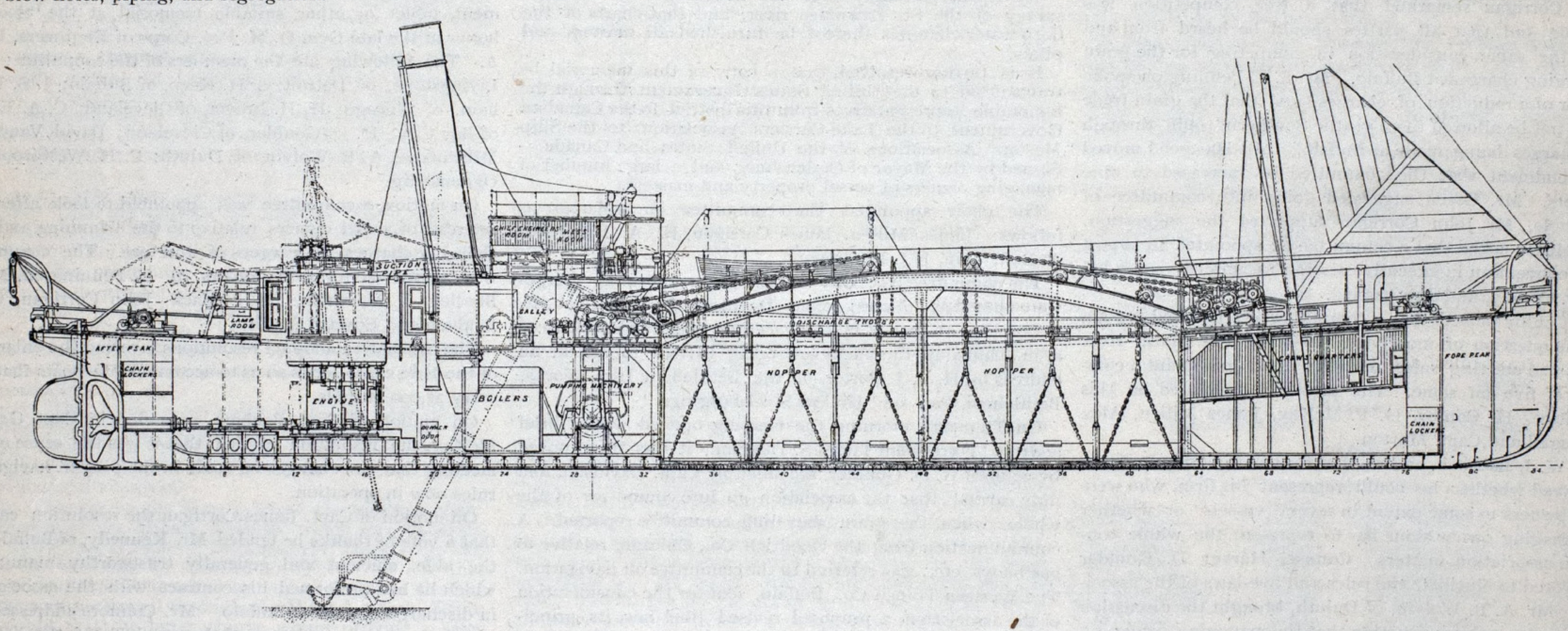
As an example can be mentioned the shafts of the U. S. S. Brooklyn, with 17 inches outside diameter, 11 inches inside diameter, and 39 feet in length, weighing 19,112 pounds. These showed, on specimens cut from full-sized prolongations, a tensile strength of 94,245 pounds, and an elastic limit of 60,775 pounds per square inch, an elongation of 25.5 per cent. and a contraction of area of 60.58 per cent.

The ability to produce forging of this hollow variety has led to their adoption in many places where castings of iron and steel have been previously used. The substitution has resulted in considerably lightening the dimensions of such pieces, and also the part in which they rest or move. Undoubtedly the best type of hollow forging, and one which is gradually being introduced both for shafts and rolls is where the walls are as the same thickness throughout, the outside and inside diameter varying together, both being greatest in the center, where the strength is required, and smallest at the bearings. Such a shaft is built on the principle of a girder, and offers the greatest strength for the least amount of metal.

SUCTION DREDGER FOR SAND AND GRAVEL.

The illustration on this page, showing a sand pump and suction dredger, is from The Engineer, London, to which source we are also indebted for the description.

The hopper suction dredger Casuarina, recently built by Messrs. Fleming & Ferguson, limited, shipbuilders and engineers, Paisley, to the order of the government of Queensland, is intended for carrying out deepening operations at the port of Brisbane. The Casuarina is constructed of Siemens-Martin steel, to Lloyds requirements, and her dimensions are: Length between perpendiculars, 170 feet; breadth molded, 34 feet; depth molded, 13 feet; load in hoppers, 15,000 cubic feet. A patent self-adjusting sucking mouthpiece is fitted to this pipe, of the most approved form, constructed wholly of steel plates of great strength, and so formed that the entering water disentegrates the soil, the amount of disentegration being variable by means of a hydraulic cylinder mounted on top of the mouthpiece, and worked from the deck by a duplex pressure pump. A steam winch is fitted for the lifting and lowering of the suction pipe.



SAND PUMP SUCTION DREDGE CASUARINA.
Built at Paisley, Scotland, to the order of the Australian Government.

Two powerful steam windlasses are fitted, one forward and one aft, for manoeuvering the vessel, and two large friction winches, steam driven, are fitted, one at each end of the hopper, for opening and closing the hopper doors.

Speed loaded, 9½ knots; dredging depth, 35 feet.

The engines for propelling this large hopper suction dredge are of the triple expansion type, having cylinders 15, 24 and 39 inches diameter respectively, and 2 feet stroke, steam being supplied by two multitubular boilers at a working pressure of 170 pounds.

The dredging apparatus consists of a large centrifugal pump of special design, by Messrs. J. and H. Gwynne, of London, driven by independent compound engines. This pump is capable of passing solids up to 8 inches without injury to the fan.

The suction pipe is 22 inches in diameter, and is fitted with a special arrangement of triple bends for bringing the pipe completely inboard when not dredging.

On dredging trials, which were carried out on the bar at Irvine, on the Ayrshire coast, during very stormy weather, the pumps gave every satisfaction, and were found capable of raising sand and gravel at the rate of 900 tons per hour from a depth of 35 feet. On her speed trials the Casuarina gave a mean speed of 9¾ knots per hour.

THE mild weather in the lake region still continues, and the question of winter, like the weather conditions, remains an open one.

EXTENSION OF THE LIVERPOOL DOCKS.

We noted in our issue of January 13 the extensive improvments and vast sums of money which the sea-port of Liverpool, England, intended to appropriate to facilitate the shipping frequenting that port.

We have since received through the Department of State, Bureau of Foreign Commerce, the complete report of U. S. Consul James Boyle, relative to these contemplated additions, and, as it is well to observe whatever appertains to the success of important shipping points we herewith produce excerpts from Consul Boyle's report:

There are now in progress and in contemplation extensions and improvements in the Liverpool dock system which it is estimated will cost over $21,500,000. The cost of the improvements now progressing will be over $5,500,000, and they include the construction of a new dry (graving) dock 920 feet long, with an entrance of 94 feet, and a large tobacco warehouse. The contemplated new scheme of extension and improvements, in addition to the above, will cost $16,500,000. This new scheme includes the enlargement of a dry dock, now 475 feet long, to 1,000 feet long and 90 feet wide, and the construction of two additional dry docks, one 630 feet long and 80 feet wide and the other 620 feet long and also 80 feet wide, in lieu of two present small dry docks the enlargement of a number of wet docks, so as to provide berths for any number of vessels 800 feet long and for a limited number 900 feet long, and one dock is to be made sufficiently large to accommodate a vessel 980 feet long. The entrances for these larger docks are to be made 100 feet wide.

Some idea of these proposed dock enlargements can be had when it is borne in mind that the Teutonic and Majestic are only 565 feet long and 57 feet wide, the Lucania and Campania 625 feet long and a little over 65 feet wide, and the new German ship Kaiser Wilhelm der Grosse (the largest ship afloat) 649 feet long and 66 feet wide.

The Liverpool docks at present are the largest and the most substantially built in the world, and the authorities seem determined to maintain their supremacy. Commodious, however, as the Liverpool docks are, it is recognized that there is a demand for enlargement to meet the ever-increasing size of ships. The enterprise of rival British and continental seaports, manifested during recent years, has had a stimulating effect upon both the dock authorities and the public of Liverpool. When the Manchester ship canal was built, prophesies were made that the shipping interests of Liverpool would fall off; but that result has not followed. When the American line was taken to Southampton in 1893, the dock authorities, partly, no doubt, in response to a strong public sentiment, made a number of improvements in harbor and dock facilities. Since then London, Hull, Plymouth and Bristol have improved their shipping facilities with the special object in view of capturing some of the Atlantic trade which hitherto has come to Liverpool. It ha; just been determined to expend $7,500,000 for docks and harbor improvements at Bristol. The growing ports of Hamburg and Antwerp are active competitors with Liverpool, and much of the continental transit passenger and freight traffic that formerly came by way of Liverpool now goes to and from Antwerp and Hamburg, and this is especially true of the trans-Atlantic trade. The report has been quite widely circulated that within the last two years Hamburg has distanced Liverpool as a seaport. This, however, is an error, and the error has arisen from the fact that in the figures given as to Hamburg the coastwise trade is always included, while they are not included in the figures usually published as to Liverpool. Great as has been the increase of the shipping trade of Hamburg, Liverpool is still the second largest seaport in Europe, being exceeded only by London. In 1896, the number of arrivals at Hamburg, including coastwise vessels, was 10,477, with a registered tonnage of 6,445,167; while Liverpool, in 1896, had 20,212 arrivals alone, not counting clearances, including coastwise vessels, with a registered tonnage of 8,715,424, an excess in favor of Liverpool over Hamburg of 9,735 vessels and of a registered tonnage of 2,270,257. The existence of Liverpool depends upon her shipping interests and the proposed enlargements and improvements in the Liverpool dock system have therefore attracted attention and have been commended all over the United Kingdon.

It is a peculiarly interesting fact that Liverpool boasts of having had the first wet dock ever constructed. This was about 1720, and to this day, all tidal data at Liverpool are based upon the level of the sill of this original dock.

By an act of Parliament of 1857, the control and management of all the docks at Liverpool (including those across the Mersey at Birkenhead) and of the harbor clear out to sea, as far as Holyhead, were vested in the Mersey docks and Harbor Board. This board consists of 28 members, 24 of whom are elected by "dock ratepayers"—that is, shipowners, etc.—the other four members being appointed. The members do not receive any compensation. It is claimed that this public board, or trust, has no parallel in the world, either in importance or magnitude. The total number of the Liverpool docks (and the expression always includes those at Birkenhead) are 90, of which 67 are "wet" and 23 are "dry" (or graving). The material used in construction is almost entirely Scotch granite, taken from the dock board's own quarries. The masonry is superb, and it has been truthfully said that the docks and entrances are like fortresses in strength. The docks have a river frontage of about 7 miles, and the total length of the dock board's property is 8¼ miles, not including certain undeveloped lands and fore shore. The area of the dock estate, exclusive of wet and dry dock space, is about 1,000 acres. The smallest wet dock is about 160 feet long and 120 feet wide, and the largest wet dock (the Great Float, at Birkenhead) is 3,300 feet long and 600 feet wide. There are between 6 and 7 miles of warehouses, owned partly by the dock board and partly by individuals and private corporations. Running parallel, on the other side of a thoroughfare, is also a line of warehouses belonging to railroad, canal, and other corporations. These vast storehouses are constructed mostly of a dark and coarse, but very strong and durable brick. So far as possible all of these structures are practically fireproof.

The cost of the docks has been enormous. It is estimated that the entire property now owned by the dock board has cost $200,000,000. Since the system has been under the present management, dating from 1857, parliamentary authority has been granted to borrow £23,057,290 ($112,058,429); and of this, £22,139,997, ($107,139,997) had been expended up to July 1, 1897, leaving £917,293 ($4,458,043) as a balance of unexpended borrowing powers. Since 1859, £2,865,280 ($13,925,260) have been transferred from the general receipts and general expenses account to the sinking fund account. The total general receipts for the year ended July 1 last, amounted to £1,400,152 ($6,804,738), and the general expenditure to £1,234,143 ($5,997,934), and by statutory requirement, £100,000 ($486,000) was, on the 1st of July, carried to the sinking fund.

Next to the docks the most interesting and important feature of the port and harbor is the dredging. The harbor is a wide and deep roadstead in the narrow part of the estuary of the Mersey. From the mouth of the river up for five miles, there is convenient and safe anchorage for the largest class of vessels to practically an unlimited extent. This roadstead has been approachable from the sea at all times of the tide since the improvements on the Mersey bar, effected by the dredging operations, commenced in 1890. The docks at Liverpool are, owing to the range of tide, only accessible from the roadstead at high water twice in the 24 hours. The range of tide in the Mersey is very considerable, that at equinoctial spring tides being about 32 feet and at low neap tides about 11 feet 6 inches. Eleven miles seaward, stretching across the mouth of the main channel, is the bar, a sandy ridge, with a long, sloping fore shore on each side, of inconstant position. This bar, under natural conditions, was 10 or 11 feet below low water of spring tides. While there was ample water over the bar at high water for any class of ship, there was a growing inconvenience in waiting for the tides. Hence the necessity for dredging at the bar, and this dredging is, it is believed, on a larger scale than any other port in the world. After very careful study and investigation, it was decided to adopt the centrifugal pump class of dredger. While the system was not entirely original with the Liverpool authorities, it had never been utilized before on such a gigantic scale. The dock board first fitted up with sand-suction pumps two ordinary hopper barges as an experiment. Each of these barges had a capacity of 500 tons, and were capable of filling their own hoppers with sand at the bar in about half an hour. The result of their work being satisfactory, the dock board had a new hopper dredger built, larger than any existing. It cost nearly $300,000. This new dredger, the Brancker, was set to work in July, 1893. She is 320 feet long and 46 feet 10 inches molded breadth. Her hopper capacity is 3,000 tons of sand. She is propelled by twin screws, and can steam, when loaded, 10 knots an hour. The brancker has two pumps, driven by direct-acting compound engines. The suction orifice of each pump is 36 inches in diameter, and the suction tube, arranged in a central well and supplying both pumps, is 45 inches in diameter. These pumps are together capable of filling the vessels' hoppers with sand of average quality in three-quarters of an hour. Although the time necessary to fill herself varies, according to the quality of the material, the minimum time is about 25 minutes. She has dredged as much as 39,000 tons of sand in 24 hours and 183,000 tons in one week of 5½ days. In November, 1895, a duplicate of the Brancker named the G. B. Crow, was put to work on the bar. From 1890, the time of the commencement of the operations, up to the end of 1896, there had been removed from the bar a total of over 17,000,000 tons of sand. While before dredging was commenced, the depth on the bar at dead low water of spring tides was only 11 feet, now there is under the same conditions between 24 and 25 feet. The average width of the buoyed cut or channel through the bar is 1,250 feet.

It should be borne in mind that the Liverpool docks are not maintained primarily for the profit of any individual or business corporation, but for the general good of the district, and particularly of Liverpool. The dock charges are so rated that, with the other source of revenue, they maintain the docks and harbor, pay interest on the indebtedness, and meet the requirements as to the sinking fund. So wel financiered is the estate that not only are the items indicated above always met, but there is a gradual diminution of dock and storage rates.

The management of this vast and important public trust is conservative, but enterprises when undertaken by the board are distinguished by wisdom of conception and thoroughness of execution. The board has an exceptionally high record for financial ability, and there is not even the suggestion of a suspicion as to its absolute honesty.

Although Liverpool shipowners are very cautious as to new enterprises, and are particularly inclined just now to be conservative until they can observe the effect of the operations of the American new tariff law, yet there are quite a number of additions to both passenger and freight service between this port and the United States to be made in the near future.

The White Star line is now having built what will be the largest vessel afloat, the Oceanic. Her length will be 704 feet, 25 feet longer than the Great Eastern, and 55 feet longer than the Kaiser Wilhelm der Grosse, the new German ship. The gross tonnage of the Oceanic will be 17,000 tons, 3,000 more than that of the Kaiser Wilhelm der Grosse. In her internal arrangements, the Oceanic will be an enlarged reproduction of the Teutonic and Majestic, and, like those vessels, will fill the British Admiralty requirements as a "mercantile armed cruiser." It is said that the Oceanic will be capable of maintaining a sea speed of 20 knots per hour or over, while in the matter of coal capacity she will be most exceptional, it being claimed that she will be able to steam 23,400 knots, at 12 knots an hour, or practically around the world without coaling. On October 2, there was lannched the Cymric for the Liverpool and New York freight service of the White Star line. The Cymric is the largest carrying vessel in the world. Her gross tonnage is 12,300, and displacement is 23,000 tons; length 600 feet; breadth, 64 feet; depth, 42 feet. The Cymric has twin propellers, driven by two separate sets of quadruple expansion engines. She is especially fitted up for the dead meat and cattle trade.

STEAMBOAT INSPECTION SERVICE.

CLASSIFICATION OF INSPECTIONS, TONNAGE AND OFFICERS LICENSED ACCORDING TO THE SEVERAL DIVISIONS OF NAVIGATION.

DIVISIONS.	Inspection.	Net tonnage.	Officers licensed
Pacific coast	652	208,104	3,674
Atlantic coast	3,791	1,481,401	17,490
Western rivers	1,016	133,999	6,571
Northern lakes	2,249	801,752	9,624
Gulf coast	619	130,456	3,093
Total	8,327	2,754,813	40,452

It is estimated that 650,000,000 passengers were carried on steam vessels during the past year. No less than 54,907 life preservers were examined, of which 160 were found deficient and rejected.

NOTES.

Jacob G. Neafie, president of the Neafie & Levy Ship and Engine Building Co., died of heart failure at his home in Philadelphia on Sunday. The company operates a large plant on the Delaware river front, having established the business in 1884 under the name of the Penn Iron Works. During the Mexican war the firm built a number of vessels for the government, and while the war of the rebellion lasted it constructed engines for 120 government ships, some of them the largest in the service. Mr. Neafie was born Dec. 25, 1815, in Monmouth county, N. J.

THE Engineering and Mining Journal, of New York, referring to the record of eighteen and a quarter million tons of freight passing through St. Mary's Falls canal during 1897, says: "These facts serve once more to show the enormous value of the lake waterways, without which it is safe to say that the iron industry of the United States would never have been able to reach its present commanding position. The future seems to present every prospect for the growth of the lake traffic, and new economies are continually being introduced into its management. Nowhere else in the world are large quantities of freight handled so quickly and at so low a cost."

THE annual meeting of the American Society of Naval Engineers, which took place in Washington last week, had the following program of papers: Medal essay, "Steam Consumption of the Main and Auxiliary Machinery on the U. S. S. Minneapolis;" "American Steam yachts," by Irving Cox, of New York; "Trial of the Niclausse Safety Water Tube Boilers," by J. M. Whitham, of Philadelphia; "The Submarine Boat Plunger," by J. Alvah Scott, of Baltimore, superintendent of the company by which the boat was built; "Boiler Testing with Various Fuels," by David J. Jones, of Chicago; "Entropy and Temperature Entropy Diagrams," by Prof. W. T. Durand, of Ithaca, N. Y.; "Speed of Construction—A Vital Factor in Naval Strength," by Frank B. King, of Washington, D. C.; "Status of Boards on Changes, as Usually Constituted under the Contracts for the Construction of Our New Navy, by W. W. Varney, of Baltimore; "Propulsive Power," by James N. Warrington, of Chicago; "The Diesel Motor," by E. D. Meier, of St. Louis; "Water-tube Boilers," by Darwin Almy, of Providence, R. I.; "Oil and Fuel Explosives on Hydraulic Lifeboat Queen," by John Platt, of New York.

VESSELS CLASSED.

The American Shipmasters' Association, New York, have this week classed or rated in the "Record of American and Foreign Shipping" the following vessels, Bark, Amy Turner; three-masted schooner, Clifford J. White and John F. Kranz; British top-sail schooner, Goldfinch.

FRENCH DIALECT POEM.

ASHLAND, WIS., Jan. 20, 1898.

To The Editor of The Marine Record:

If the "Wreck of the Julie Plante" in issue of the RECORD of the 6th inst., is not what "Subscriber" was looking for, I enclose herewith another French dialect poem entitled "De Look and See." Author unknown. Yours truly,

H. B. WARNER.

DE "LOOK AN SEE."

A skow kom sailing down Lak St. Claire
Shingal an cord hood her deck load ware;
De win blew fresh an de win blew free,
An speed her way dat "Look an See;"
Out she sail from de creek of de Bear,
Over de waters of Lak San Claire.

De win increase till he blow a gale,
De "Look an See" she reef her sail;
De water joomp rite o'er de boat
An way tree stick of cord hood flote;
From gail to hurricain blow de wind,
Four bonch of shingal flote behind.

De captain she can't stan dat no more,
All de profit gone from dat trip sure;
If all shingal an de cord hood go; de sheriff he seeze,
An sell dat skow, den no more whiskey,
No more bread, no more cabin to cover de head.

So de mate she yell in de gail,
Batise stan by an let go dat sail;
Haul in de peek halyard when I luff de boat,
De peek haul in de halyard gon,
An under de gib day scoot along.

Dey reach de river, dey pass de lite,
Dare stopping place soon com in site;
De captain jomp rite roun and roun;
Parblue Batise, why doan you haul down?
Can't do it captain, de mate reply,
If you tink you can, you bess com try.

Trow in de hank so quick you can,
De captain cry as he forward ran;
Trow in de hank, an we make tings snug,
Better do dat dan hire a tug;
But captain, de hank ain't got no string on,
Never mind, trow her in, may stop her som.

THE light-houses cost the country $3,390,090 during the last fiscal year. In other countries vessels pay for the lights that they make use of, and from this levy are the lights maintained.

A NEW CALORIC MOTOR.

On the 16th of June last, before the congress of German engineers at Cassell, Mr. Rudolf Diesel, of Munich, presented an elaborate scientific description and history of his new "rational caloric motor," an invention which so eminent an authority as Prof. Schroter indorses as a scientific triumph, and which, in the opinion of many expert engineers who have since studied and tested it in operation, marks an era in the progress of thermodynamics.

It is well known that the steam engine, after its inestimable work during the past century, and with all the improvements that it has undergone within recent years, is still, from a scientific standpoint, a wasteful and imperfect motor, which utilizes only a small percentage of the energy stored in the fuel that it consumes. Competent authorities estimate that an ordinary high-pressure steam engine utilizes only 5 per cent. of the value of its coal; a Corliss engine of the best modern type may reach an efficiency of 8 per cent., while a triple-expansion engine of 1,000 horse-power or more, with condenser and perfected cut-off, does not surpass 12 to 13 per cent., which is the maximum economic achievement of the steam engine at its present stage of development. The remaining 87 or 88 per cent. of the fuel is wasted in imperfect combustion, the costly evaporation of water by radiation at every point, and in the heat that escapes with the exhaust steam after it has done its work.

Nearly a century ago Sadi Carnot, the eminent French engineer, formulated and described in theory a perfect engine, and his specifications, embodied in text books on thermodynamics, have formed the guide and goal of modern students of that science.

The first practical Diesel motor built at Augsburg was one of 12 horse-power, which ran with entire success until it was superceded by another of 20 horse-power, improved in several details, and which, after eight months of constant service, is conceded to have fulfilled every claim and promise of its inventor.

Omitting all scientific technicalities, the new motor may be concisely described as a gas engine somewhat similar in outward appearance to the ordinary type, but more compact and heavier, since the enormous pressure under which it operates requires great solidity and strength in all its parts. The piston is long and of peculiar construction, having a countersunk recess in its outer face. The machine is so constructed that at the end of the outward stroke of the piston compressed air is admitted to the cylinder, and, at the same moment, the fuel, in the form of petroleum or coal gas, is injected in proper quantity. The piston, returning with the momentum of the fly wheel, compresses the already partly condensed air to a density of thirty-five atmospheres, generating by such compression a temperature of about 1,200° F., sufficient to instantly ignite the fuel, which burns with a slow but powerful expansive force—500 pounds to the square inch—that drives the piston outward until the pressure is released by an opening valve at the end of the stroke.

Thus far the energy has been applied to but one side of the piston, the forward end of the cylinder being open, as in the ordinary gas engine, but there is no apparent reason why the same process can not be repeated in both ends of the cylinder, and it is confidently expected that a double-acting 1,000 horse-power Diesel motor will be the crowning feature of the German exhibit at the Paris Exposition in 1900. The cylinder is enclosed in a water jacket, which maintains a moderate temperature and wholly averts the deterioration of the interior working surfaces that is caused by the action of superheated steam. From this brief description it will be seen that Ericsson, in the construction of his engine, was on the right road, but he was not educated in the science of thermodynamics, as it is understood to-day, and by applying the heat outside the cylinder, missed the essential point that could alone secure success.

From the verbal account of an eminent American engineer, who came specially to Germany for the purpose and has spent the past fortnight at Augsburg studying and testing the 20 horse-power motor in operation there, it appears that the machine is compact, runs almost noiselessly and without shock or jar, and after eight months of service shows better results than when first put in operation.

The Diesel motor has been patented in all countries where patents are granted for inventions, and the rights for France and Great Britain have been sold, while those for the United States are under negotiations which will probably be closed before this report may appear. In France, important works are being established at Bar-le-Duc for the manufacture of the new motor. In England a motor of 250 horse-power is being built for marine use, it being expected that the suppression of boilers, coal bunkers, and condensing apparatus, combined with a motive force of 500 pounds per inch, will enable the new motor to revolutionize the machinery of torpodo boats and destroyers, if not ultimately that of all seagoing war vessels, since its use will, among other advantages, allow water-tight bulkheads, which must now be kept open for the passing of coal, to be kept closed indefinitely when a ship is in action or danger.

Thus far the fuel used has been mainly petroleum; but it has been demonstrated that common illuminating gas is a perfect material for this purpose, and the use for producer gas at American prices would, it is estimated, furnish power at half the cost of steam generated with coal costing 80 cents per ton.

So many inventions have been made, patented and announced as likely to supercede the steam engine, that claims like those now put forth for the Diesel motor will naturally be received with some incredulity. It remains, therefore, to be simply stated that it has been examined and approved by scientists like Lord Kelvin, in Great Britain, and by Prof. Schroter, who, since the retirement of Dr. Zenner, is the

foremost authority on thermodynamics in Germany. Expert commissions from all civilized countries, including notably Japan and Australia, have come to Augsburg to examine the new motor, and have added their testimony to the general verdict in its favor.

American engineers who are unable to make such a journey, but to whom the subject is of practical interest, will find the history and scientific theory of Mr. Diesel's invention elaborately presented (with drawings) by the inventor in Nos. 28 and 29 (July 10 and 17, 1897) of the Zeitschrift des Vereines Deutscher Ingenieure, and in No. 30 of the same publication.

FRANK H. MASON, Consul-General,
Frankfort.

PUGET SOUND TRIBUTARY TO THE LAKES.

Thos. F. Hickler, a Sault St. Marie contractor, is on a visit to Seattle, Wash., for the purpose of hurrying along the shipment of timber to be used in the construction of the new canal guard gates. Hickler Bros. have the contract for furnishing the new material, which should have been on hand and work in progress before this. Heavy floods in the locality where the timber is being procured at the "Soo" canal washed away railroads and thus deterred the work. Hickler Bros. will get timber elsewhere if the firm with whom the original order was placed cannot fill it promptly, as there is barely time to complete the new canal guard gates for which the material is required before the opening of navigation.

VISIBLE SUPPLY OF GRAIN

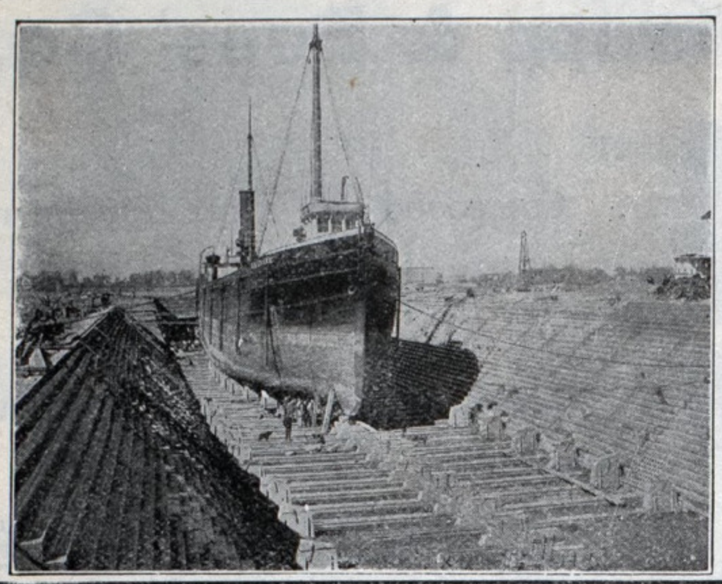
As compiled for The Marine Record, by George F. Stone, Secretary Chicago Board of Trade.

CITIES WHERE STORED.	WHEAT. Bushels.	CORN. Bushels.	OATS. Bushels.	RYE. Bushels.	BARLEY. Bushels.
Buffalo	1,433.000	3.013,000	148,000	50,000	959.000
Chicago	10,733.000	15,391.000	1,131,000	612,000	796.000
Detroit	140.000	78.000	8.000	24.000	9.000
Duluth and Superior	2,111,000	1,832,000	1,522,000	1,092,000	532,000
Milwaukee	132,000	122,000	93,000	24.000	34,000
Montreal	101,000	62,000	568,000	33.000	24.000
Oswego	6.000	50.000	.....	.....	45,000
Toledo	303 000	701.000	489,000	44,000	.....
Toronto	59.000	.....	14,000	.....	26,000
On Canal	.....	.....	46,000	.....	.....
On Mississippi	80,000	54,000	.....	.....	.....
Grand Total	37,838,000	41,134,000	15,063,000	4,151,000	3,582,000
Corresponding Date, 1897	52,459,000	21,522,000	13,621,000	3,443,000	3,877,000

While the stock of grain at lake ports only is here given, the total shows the figures for the entire country except the Pacific slope.

NEW DOCKS AT HANCOCK.

Before the present year comes to a close Hancock will be able to boast of the finest system of dockage on Portage Lake; in fact, one of the best on the chain of lakes. The dock will be built by the Mineral Range Railroad Co. President Fitch informed the Mining Journal, Marquette, that the contract had been let to Mr. Peppard, of Minneapolis, who is already engaged in getting out the necessary piles and timber for construction, and work will be commenced as soon as the situation will permit. The dock will be 1,000 feet in length, covering the entire lake frontage of the company, and in width will extend to the harbor line, which is about 50 feet additional to the present docks. The dock will be equipped with four modern derrick hoists, by which about 850 tons of coal can be unloaded in ten hours. The necessity of increased dock facilities has been apparent for some time, owing to the increased business on the north range, and was felt particularly during October and November of last year, when the coal shipments were by far the heaviest of any similar period in the history of the county. With the increased dockage and modern hoisting equipment the company will be able to render the best of service and delays to vessels will be a thing of the past.



Craig Ship Building Co.

TOLEDO, OHIO.

New Dry-Dock 450 feet long, 110 feet wide on top, 55 feet wide on bottom, 16 feet water on sill.

Repairs to Metal and Wooden Ships a Specialty.

Metal and Wooden Ship Builders.

H. A. HAWGOOD, Pres't. C. A. MORGAN, Gen'l Mang'r. A. SMITH, Sec'y.
PHILIP MINCH, Vice-Pres't. J. R. SPRANKLE, Treas.

The Cleveland Tug Company,

First-class Tugs, Steam Pumps, Divers, Hawsers, Lifting Screws, Etc., furnished Promptly on Orders by Telegraph or otherwise.

Steamers when outside wanting our Tugs, blow one long whistle and as many short ones as they want tugs.

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Long Distance Telephone 725.

The "CINCINNATI"
Automatic Steam Steering Gear.

Simple, Powerful Machine. Noiseless and Sure. Send for Circular.

FRONTIER IRON WORKS, Detroit Mich.
Agents for the Lakes.

American Steel Barge Co.

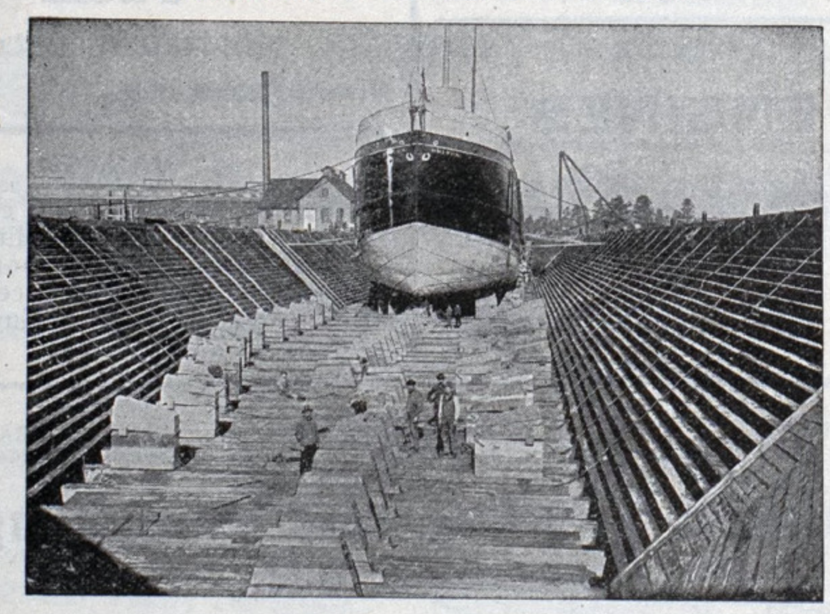
STEEL AND METAL SHIPS

Of all Classes built on shortest possible notice at our yards at

WEST SUPERIOR, WIS., and also at EVERETT, WASH.

PHOTOGRAPH OF 300-FOOT BOAT IN DOCK.

Plates and Material always on hand to repair all kinds of Metal Ships in Shortest Time.



Best Quality of Oak in Stock for Repairing Wooden Vessels of all Classes.

SIZE OF DOCK

Length, Extreme	537 feet.	Entrance, Top	55 feet 9 in.
Breadth, Top	90 " 4 in.	Entrance, Bottom	50 "
Breadth, Bottom	52 "	Depth over Sills	18 "

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Prices for Repairs and Docking same as at Lower Lake Ports.

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A Number of Propeller Wheels in Stock at Dry-Dock.

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EAST SIDE, NEAR IRONVILLE, - - - TOLEDO, O.

Dimensions of Dock, 236 feet long, 55 feet wide at top and 37 feet wide at gate. Nine feet water over sill. RATES OF DOCKING, Ten Cents per registered gross ton for vessels over 200 tons. Jig Mill and Planer in connection with Dock.

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Made especially for Stacks, Decks, Sides, Hulls, and Water Compartments.
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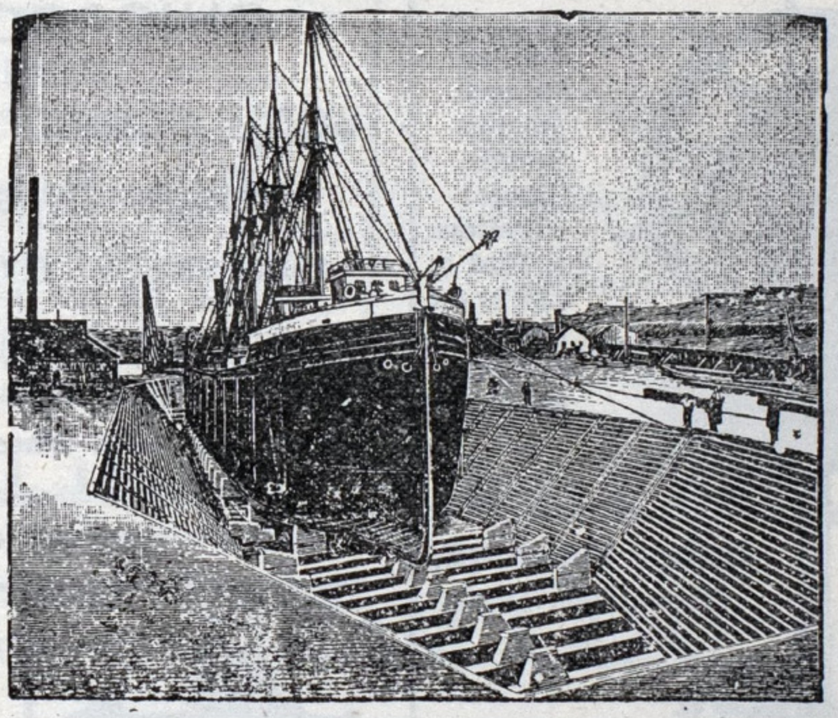

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